Another new development using

B. F. Goodrich Chemical *raw materials*

Golf bag made by Atlantic Products Corp., Trenton, N. J.
B. F. Goodrich Chemical Company supplies the Good-rite Resin 50 only.

BOTTOM WINS TOP SCORE FOR WEAR!

THE rubber bottom of this golf bag can take a beating that former types *couldn't*. Materials used previously would either be too brittle and crack, or wear through too soon.

So the bag manufacturer tried a new rubber compound for molding the bottoms—a compound to which Good-rite Resin 50 had been added. That did it. He got the hardness and improved abrasion and wear resistance that was wanted. This golf bag bottom can be dragged around a course, dropped on a hard locker-room floor time after time, and be ready for plenty more rough treatment. The bag bottom will outwear the bag itself. A big improvement—and an extra sales advantage!

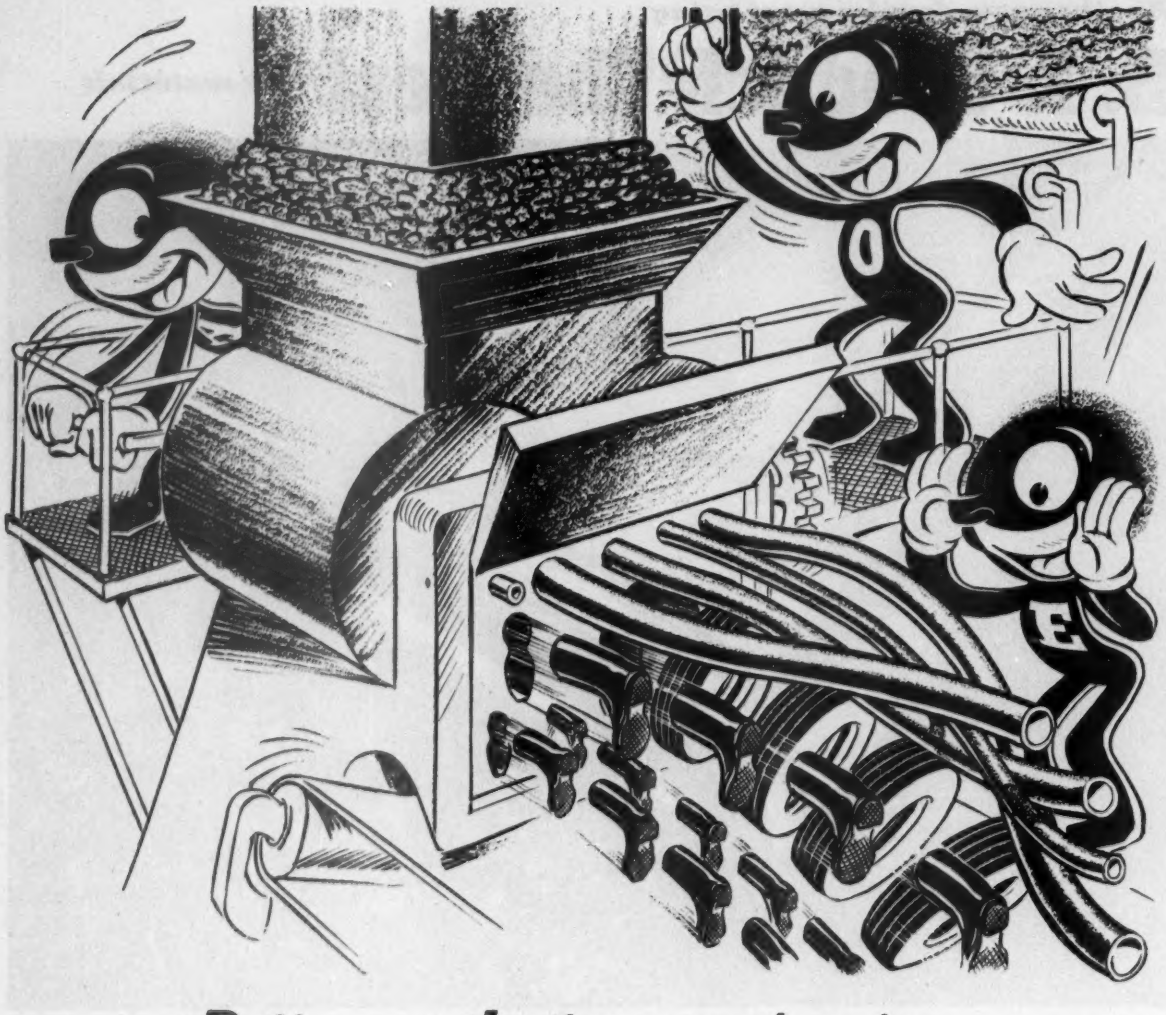
Good-rite Resin 50 has a high score for helping improve many other products. It is an easy-processing, reinforcing and stiffening agent compatible with crude rubber and most American rubbers. It affords a new and simple approach to hardness problems. It saves time by eliminating master-batching. It gives rubber compounds better flex life, higher elongation, improved abrasion resistance and better handling because Resin 50 acts as a plasticizer at processing temperatures.

A white, free-flowing powder, Good-rite Resin 50 can be compounded in a wide range of colors. For helpful technical information, please write Dept. HB-6, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

Hycar
American Rubber

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors



Better products . . . easier, too,

When the **Philblacks*** *work for you!*

Let the Philblacks send your sales curve up and production costs down!

Philblack E . . . the "toughest" black on the market today! Up to 42% better abrasion resistance. Super resistance to cut and crack growth, too. Truly a "mileage miracle" when used in synthetic or natural tire treads. Use this SAF black wherever you need super wear in rubber!

Philblack O . . . this HAF black is used extensively for tires, industrial belts and hoses. Affords excellent abrasion resistance, long flex life and good electrical conductivity.

Philblack A . . . easy-processing MAF black, famous for accurate moldings; fast, trouble-free tubing; good appearance of finished products. High hot tensile, too, and ability to disperse heat.

Consult our technical sales representative who calls on you or write our nearest office.

PHILLIPS CHEMICAL COMPANY

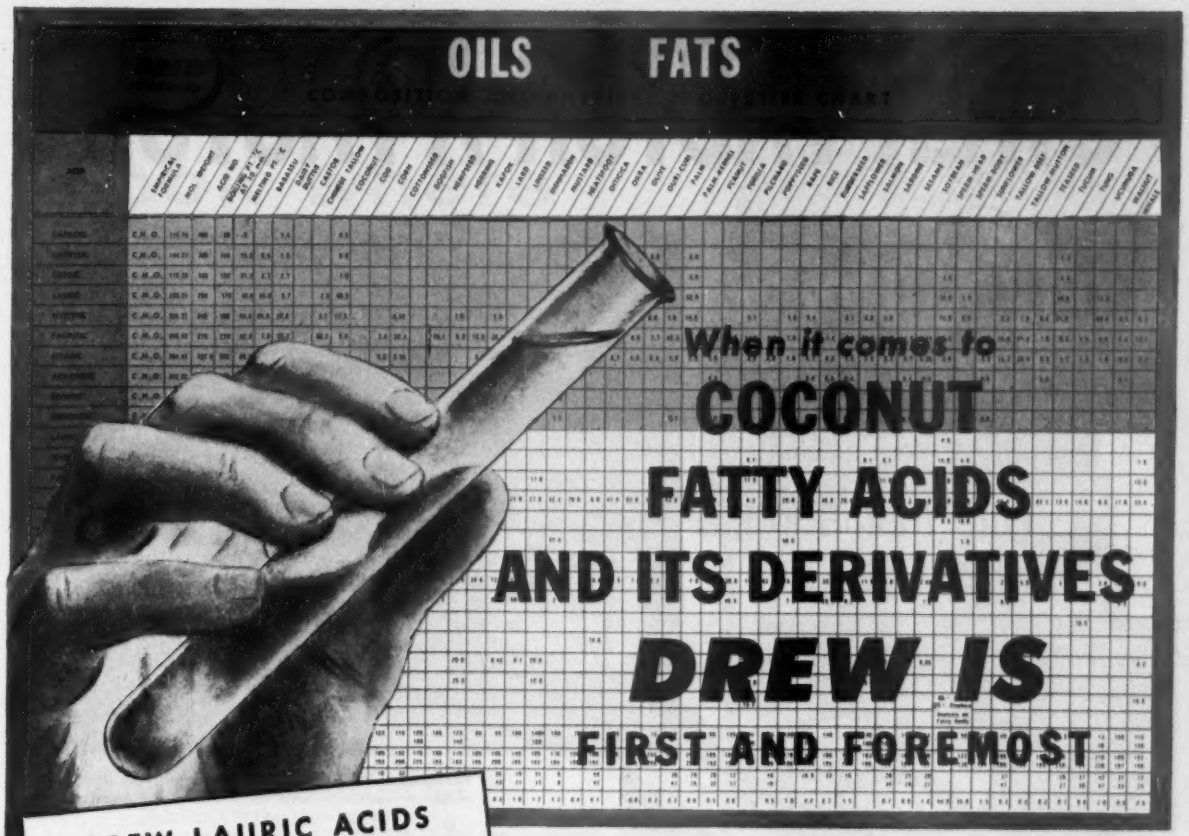
PHILBLACK SALES DIVISION

EVANS BUILDING · AKRON 8, OHIO

PHILBLACK EXPORT SALES DIVISION · 80 BROADWAY · NEW YORK 8, N.Y.

* A Trademark

Philblack E, Philblack O, and Philblack A are manufactured at Borger, Texas. Warehouses in Akron, Boston, Chicago and Trenton. West Coast agent: Harwick Standard Chemical Company, Los Angeles. Canadian agent: H. L. Blachford, Ltd., Montreal and Toronto.



DREW LAURIC ACIDS

APPROXIMATE CHEMICAL COMPOSITION	AAB %	ABL %	AB %	ABH %	AAAR %
Caproic C6	—	—	—	—	—
Caprylic C8	2.0	1.5	1.0	1.0	1.0
Capric C10	4.0	3.5	3.0	3.0	2.0
Lauric C12	90.0	78.0	60.0	60.0	45.0
Myristic C14	2.0	13.0	18.0	18.0	22.0
Palmitic C16	—	8.0	7.0	7.0	11.0
Stearic C18	—	1.0	1.0	8.0	2.5
Oleic C18	2.0	3.0	7.0	3.0	11.0
Linoleic C18	—	—	3.0	—	5.5
Linolenic C18	—	—	—	—	—
APPROXIMATE CHEMICAL DATA	**AAB**	**ABL**	**AB**	**ABH**	**AAAR**
FFA	139-144	138-141	129-132	129-132	116-126
TITRE °C	37.0 Min.	36.0 Min.	24-28	29	30.0 Max.
IODINE VALUE	3.0 Max.	5.0 Max.	9-16	3.0 Max.	14-22
ACID VALUE	277-287	275-281	251-263	251-263	232-253
SAP. VALUE	277-287	275-281	251-263	251-263	232-253
COLOR	15.0/2.0	20.0/3.0	20.0/3.0	15.0/2.0	35.0/5.0

Take LAURIC ACIDS, for instance

. . . notice the

- **WIDE CHOICE**
- **OUTSTANDING QUALITY**

Drew markets a variety of Lauric Acids, individually tailored to specific needs in the chemical, drug and cosmetic fields. Continual development of diversified physical properties makes it possible for you to select exactly the right Lauric Acid for your formula. And Drew's consistent uniform quality gives you a *plus* factor that means a head start for your product.

Write for booklet, "DREW FATTY ACIDS" and copy of Drew's new chart, "OILS AND FATS".

TECHNICAL PRODUCTS DIVISION

E. F. DREW & CO., Inc.

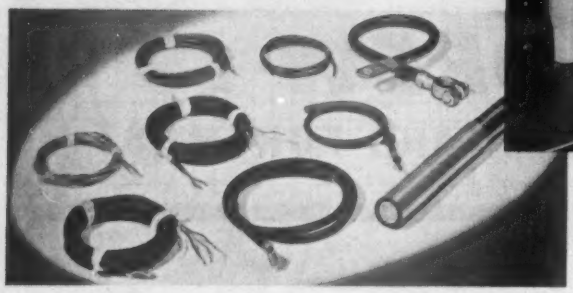
15 East 26th Street, New York 10, N. Y.

CHICAGO PHILADELPHIA BOSTON

DREW PRODUCTS

POWER FACTOR A FACTOR?

PLIOLITE S-6B gives you better, lower-cost wire insulation



EXTENSIVE TESTS prove PLIOLITE S-6B has greater electrical resistance than other reinforcing resins.

EXTENSIVE USE proves PLIOLITE S-6B gives better, easier-made insulation at lower cost.

PLIOLITE S-6B gives you better insulation because of its higher electrical resistance (see chart) and the improved properties it gives natural and synthetic rubbers. This high styrene-butadiene copolymer reinforces rubber – makes jacket stocks longer and stronger–improves appearance, age life and abrasion resistance. It also imparts resistance to water absorption and to oils, greases and chemicals. It makes possible the production of exactly centered, thin-walled insulation of uniform wall thickness.

PLIOLITE S-6B gives you lower-cost insulation because of its low specific gravity, its faster, easier processing and its tolerance of higher loading. It disperses more rapidly and more thoroughly than other reinforcing resins – reduces the "nerve" of rubber for faster, smoother, more exact extrusions – permits extension with inexpensive fillers without sacrifice of properties.

If you want wire or cable insulation of higher quality at lower pound-volume cost, use PLIOLITE S-6B. Free literature, technical assistance and samples are yours by writing to:

Goodyear, Chemical Division, Akron 16, Ohio.

ELECTRICAL DATA — PLIOLITE S-6B vs. OTHER RESINS

DIELECTRIC CONSTANT — **FREQUENCY USED**

RESINS TESTED		1000 cycles	1×10^6 cycles	10×10^6 cycles
PLIOLITE S-6B	Dry	2.57	2.53	2.52
	Wet	–	2.58	2.60
RESIN "A"	Dry	2.62	2.54	2.52
	Wet	–	2.59	2.61
RESIN "B"	Dry	2.61	2.58	2.60
	Wet	–	2.68	2.70

POWER FACTOR

PLIOLITE S-6B	Dry	0.00029	0.00025	0.0021
	Wet	–	0.00048	0.0025
RESIN "A"	Dry	0.00042	0.00029	0.0018
	Wet	–	0.00190	0.0064
RESIN "B"	Dry	0.00054	0.00057	0.0015
	Wet	–	0.00170	0.0060

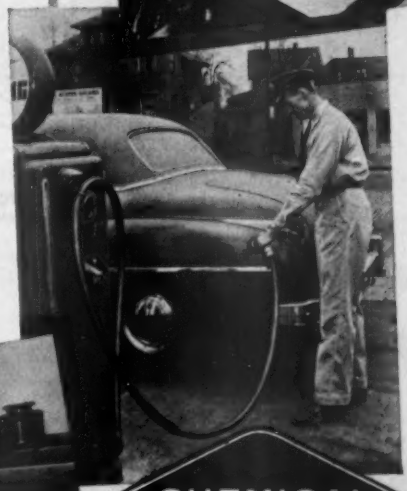
CHEMICAL GOODYEAR DIVISION

We think you'll like
THE GOODYEAR TELEVISION PLAYHOUSE
every other Sunday—NBC TV Network

Chemigum, Pliobond, Pliolite, Pliovic—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Use-Proved Products — CHEMIGUM • PLIOBOND • PLIOLITE • PLIOVIC • WING-CHEMICALS —The Finest Chemicals for Industry

Look where they're using Chemigum



TYPICAL CHEMIGUM USES

resisting heat, oil, grease, gasoline, solvents

Fuel Oil and Gasoline Hose
Pipe Line Connections
Printers' Rolls and Press Blankets
Valve Inserts
Gaskets for grease and solvent containers
Cements and Adhesives
Plasticizer for vinyls and phenolics
Oil-resistant Shoe Soles and Heels
Molded Automotive Parts
Cable Covers
Tank Linings
Hard Packing Compounds
Synthetic Ebonites
Coated Fabrics
Conveyor Belt Covers and Friction Compounds
Chemical Piping
Fuel Cells and Containers

Wherever close tolerances, physical properties and good appearance must be maintained, along with outstanding resistance to heat aging, oils, greases and solvents, you can count on CHEMIGUM. This use-proved Goodyear synthetic is the easiest-processing nitrile rubber you can use.

Ask for full details today by writing:

Goodyear, Chemical Division, Akron 16, Ohio

Chemigum, Pliobond, Pliolite, Pliovic—T. M.'s
The Goodyear Tire & Rubber Company, Akron, Ohio

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Use-Proved Products—CHEMIGUM • PLIOBOND • PLIOLITE • PLIOVIC • WING-CHEMICALS—The Finest Chemicals for Industry

ACTIVATOR NEWS

A supplement to THE ACTIVATOR—the house organ issued by The New Jersey Zinc Company for over 15 years to aid the Rubber Industry in its use of Zinc Oxide.

UNIQUE COATING
on ZINC OXIDE outwits humidity

Customers tell us that, even in high humidity, switching to PROTOX*-166 ZINC OXIDE provides uniformly fast mixing and excellent dispersion.

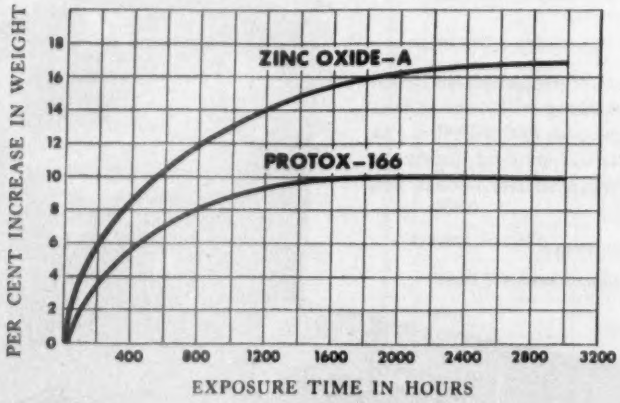
The outstanding humidity resistance of PROTOX-166 stems from the patented coating of zinc propionate that seals the individual particles. Here is how it works:

1. It reduces moisture pickup (see chart).
2. It prevents aggregation that leads to poor dispersion.
3. It is readily wetted by rubber.

*U. S. Patents 2,303,329 and 2,303,330

MOISTURE ABSORPTION OF ZINC OXIDES

under saturated conditions at 77° F.



Protox-166, surface-coated with zinc propionate, picks up less moisture in storage than do untreated types, such as Zinc Oxide-A, and thus processes more uniformly and faster.

TEST PROCEDURE

Three grams of pigment were weighed into wide-mouth (2" dia.) weighing bottles and conditioned for 24 hours over calcium chloride at room temperature. After determining the net weights of the samples, the bottles were stored, unstoppered, over water in a large container held in a constant temperature (77°F.) room. The thin layer of each sample was stirred once daily to assure a uniform condition throughout the oxide, and was weighed periodically to determine the per cent increase in weight.

NOTE: The per cent moisture pickup for zinc oxides in this test is, of course, far more than would occur under industrial storage conditions in multi-walled bags.

THE NEW JERSEY ZINC COMPANY

Producers of Horse Head Zinc Pigments

... most used by rubber manufacturers since 1852

160 Front Street, New York 38, N. Y.

HORSE HEAD PRODUCTS

RUBBER FABRICATORS NEED ACCURATE CUTTING DIES

For Cutting

Rubber, Neoprene, Plastics, etc.
Sheeting, Foam, Sponge, Cellular,
Cured & Uncured

Gang Dies Our Specialty

- Accuracy to close Tolerances
- Durability
- Genuine Understanding of the problems of rubber goods manufacturers

MALLET HANDLE DIES

PURPOSE — For those who have no machinery and do not wish to purchase any. For Cutting — Rubber, Neoprene, Plastics, etc.

ADVANTAGE — Cut direct from bolts or not.

SERVICE—One to three days.

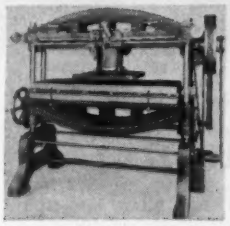
STEEL RULE CUTTING DIES

Used on Die Cutting Press, Printing Press or Power Press

PURPOSE — Especially suited for cutting — Rubber, Neoprene, Plastics, etc.

ADVANTAGE—Low in cost. Suitable for long production runs. It is necessary to cut from rectangular sheets which are fed into the press.

SERVICE—One day service.



STEEL RULE CLICKER DIES

Use On Clicker Machine or Dinker Press

PURPOSE—For Cutting Rubber, Neoprene, Plastics, etc.

ADVANTAGE — More reasonably priced than the all steel dies. Recommended for small and medium quantities where cost of an all steel die is not warranted.

SERVICE—One day service.

ALL STEEL DIES

Use On Clicker Machine or Beam Press or Power Press

PURPOSE—For Cutting—Rubber, Neoprene, Plastics, etc.

ADVANTAGE — Cut direct from rolls without first cutting into sheets.

SERVICE—One to three day service on dies.

Dies for cutting
Gaskets, flashing from molded parts, rubber soles, foam and sponge for furniture padding, inflated toys, clothing and footwear, etc.

DIE CUTTING SERVICE

PURPOSE—For those who prefer to have their cutting done by others.

ADVANTAGE—We can die cut your product for you on our own presses rapidly and economically at a low "per thousand" cost.

SERVICE—One to three days.

SAME DAY SERVICE

ACCURATE

STEEL RULE DIE MANUFACTURERS

24-28 West 21st Street, New York 10, N. Y. CHelsea 2-0860-1

Subsidiaries: American Fabricators; Interstate Die Cutting Co., Inc.

Intelligent Service to the Rubber Goods Industry for Over 22 Years

Sunk by rubber quality problems?

Skellysolve for Rubber and Related Industries

SKELLYSOLVE-B. For making quick-setting cements for the shoe, tape, container, tire and other industries. Quick-drying, with no foreign taste or odor in dried compound.

SKELLYSOLVE-C. For making quick-setting cements with a somewhat slower drying rate than those compounded with Skellysolve-B.

SKELLYSOLVE-D. For cements and variety of manufacturing operations. Good odor. Quick drying. Minimum of heavy, greasy compounds.

SKELLYSOLVE-H. For general use in manufacturing operations and cements, where faster evaporation rate than that of Skellysolve-D is desired.

SKELLYSOLVE-E. For use wherever a relatively slow drying solvent is desired.

SKELLYSOLVE-R. For general use in tire building and a variety of other manufacturing operations and cements. Reduces evaporation losses. Medium quick final dry. Lessens blooting and skinning tendency.

"Doc" MacGEE says: If you can't afford to take chances on the quality of *your* rubber product—don't risk using unknown solvents in your manufacturing processes. You're *certain* of getting all the solvent characteristics you need when you specify Skellysolve. It's made to protect your product and your production lines.

Uniformity is always assured when your solvent is Skellysolve. No batch-to-batch variations that might "raise Cain" with your plant operations. Strict quality control at Skellysolve helps guard the quality of your product and its sales appeal.

Specifically, Skellysolve is 100% dependable for low end points, controlled evaporation, low vapor pressure, a minimum of unsaturates and pyrogenic decomposition products. Minimum levels of low and high boiling compounds help reduce rejects caused by blushing and blisters.

Controlled vapor pressure reduces danger of bloated containers, and a minimum of low boiling compounds means freedom from seeds in rubber cements. And absence of greasy residues pays off in higher bonding strength for rubber cements.

Technical facts in complete detail are yours for the asking. Write today. And for special help on solvent application problems, consult with the Skellysolve Technical Fieldman. No obligation.

SKELLY

Skellysolve

SOLVENTS DIVISION, SKELLY OIL COMPANY
KANSAS CITY, MISSOURI

For good whiteness . . . or true blues
in rubber or plastic tile
specify Calco's

ULTRAMARINE BLUE

59-1824
59-3584
59-5604
59-6204

High resistance to alkalis and soaps

For maximum brilliance in whites specify UNITANE® 0-220 (Titanium Dioxide) . . . for maximum strength and hiding, UNITANE OR-350.

You get highest color purity in Calco's Ultramarine Blues. Calco types are formulated to cover a wide range of shade, clarity and strength to give maximum versatility in compounding.

You can make your selection of these popular pigments according to the properties listed in the table—or call in your Calco representative for complete information.

	Tint
Calco Ultramarine Blue 59-1824	Reddest
Calco Ultramarine Blue 59-3584	Intermediate (Med. Red)
Calco Ultramarine Blue 59-5604	Intermediate (Med. Red)
Calco Ultramarine Blue 59-6204	Greenest

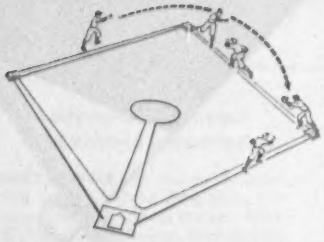
AMERICAN Cyanamid COMPANY

CALCO CHEMICAL DIVISION, PIGMENT DEPARTMENT
BOUND BROOK, NEW JERSEY

Branches and Warehouses in Principal Cities

Calco®

TAYLOR to ADAMSON to KENTILE



...a double play for

KENRUBBER TILE FLOORS ®

Kentile, Inc. produce Kenrubber floor tile of great beauty and durability. In their modern plant at South Plainfield, N. J., automatic controls play a big part in insuring the consistently high quality for which they have justly earned a fine reputation.

Shown above is a battery of Adamson multi-platen presses, the entire operation of which is controlled by Taylor instrumentation. Here's how the system works: A FULSCOPE* Pressure Controller automatically regulates and records pre-set steam pressures to the platens. And a second pen records the condensate temperature. The Blow-down Timer automatically disposes of the condensate at an adjustable repeating interval.

Operation of the press is controlled by a Taylor FLEX-O-TIMER* Time Cycle Controller, which (1) automatically closes the press; (2) "bumps" the press as many times as desired; (3) times the cure; (4) opens the press. While the press is closing, the operator may open it by simply pushing the "Emergency" button.

Operator time is thus cut to a minimum, while Kentile, Inc. is assured of a uniformly high quality product. This is just one of many Taylor designed control systems for the rubber industry. Ask your Taylor Field Engineer, or write Taylor Instrument Companies, Rochester, N.Y., or Toronto, Canada.

• • •

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

*Reg. U. S. Pat. Off.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

ONLY PICCOLYTE

can offer you:

COLOR—so light that new color standards were made necessary.

ECONOMY—Low in first cost and soluble in low-cost petroleum solvents.

VARIETY—Standard and special grades in melting points from 10° C to 125° C.

NEUTRALITY—Low acid number—less than 4—unsaponifiable.

WATERPROOF—Piccolyte resins are unaffected by water or moisture.

PERMANENCE—Stable and non-yellowing—unaffected by alkalies and salts.

LOW COST made by patented process that permits low selling price.

Write

—for complete data, specifications and samples. Please describe intended use in inquiry.

Clairton, Pennsylvania

Plants at Clairton, Pa.; West Elizabeth, Pa.; and Chester, Pa.

For Rubber Compounding Use VELSICOL RESINS

NOW AVAILABLE IN VARYING MELTING-POINT RANGES AND COLORED GRADES

SOME SUGGESTED APPLICATIONS:

- Mechanical Goods
- Electrical Insulation Compounds
- Rubber Shoe Soles and Heels
- Rubber Floor Tiling
- Gaskets and Jar Rings
- Rubber Adhesives and Cements
- Molded Rubber Products
- Tubular Compounds
- Reclaimed Rubber Sheeting
- Colored Rubber Stocks
- Battery Cases
- Hard Rubber Compounds

FEATURES:

1. THERMOPLASTIC HYDROCARBON RESINS.
2. COMPATIBLE WITH NATURAL AND SYNTHETIC RUBBERS.
3. EFFECTIVE PLASTICIZERS AND SOFTENERS . . . in highly-loaded clay stocks or in recipes incorporating carbon black.
4. MILL READILY.
5. EXCELLENT DISPERSING AGENTS FOR FILLERS AND PIGMENTS.
6. FACILITATE PROCESSING PROCEDURES . . . impart excellent milling, calendering processing and tubing characteristics to stocks.
7. IMPART EXCELLENT PERFORMANCE CHARACTERISTICS . . . such as good tensile strength, elongation and modulus, as well as good resistance to abrasion and aging.
8. POSSESS HIGH ELECTRICAL RESISTANCE PROPERTIES.
9. AID IN THE DEVELOPMENT OF NON-SCORCHY STOCKS . . . without excessive retardation of cure at high temperatures.

For additional information concerning properties and applications of Velsicol Resins, WRITE:

VELSICOL CORPORATION

General Offices and Laboratories
330 East Grand Avenue, Chicago 11, Illinois

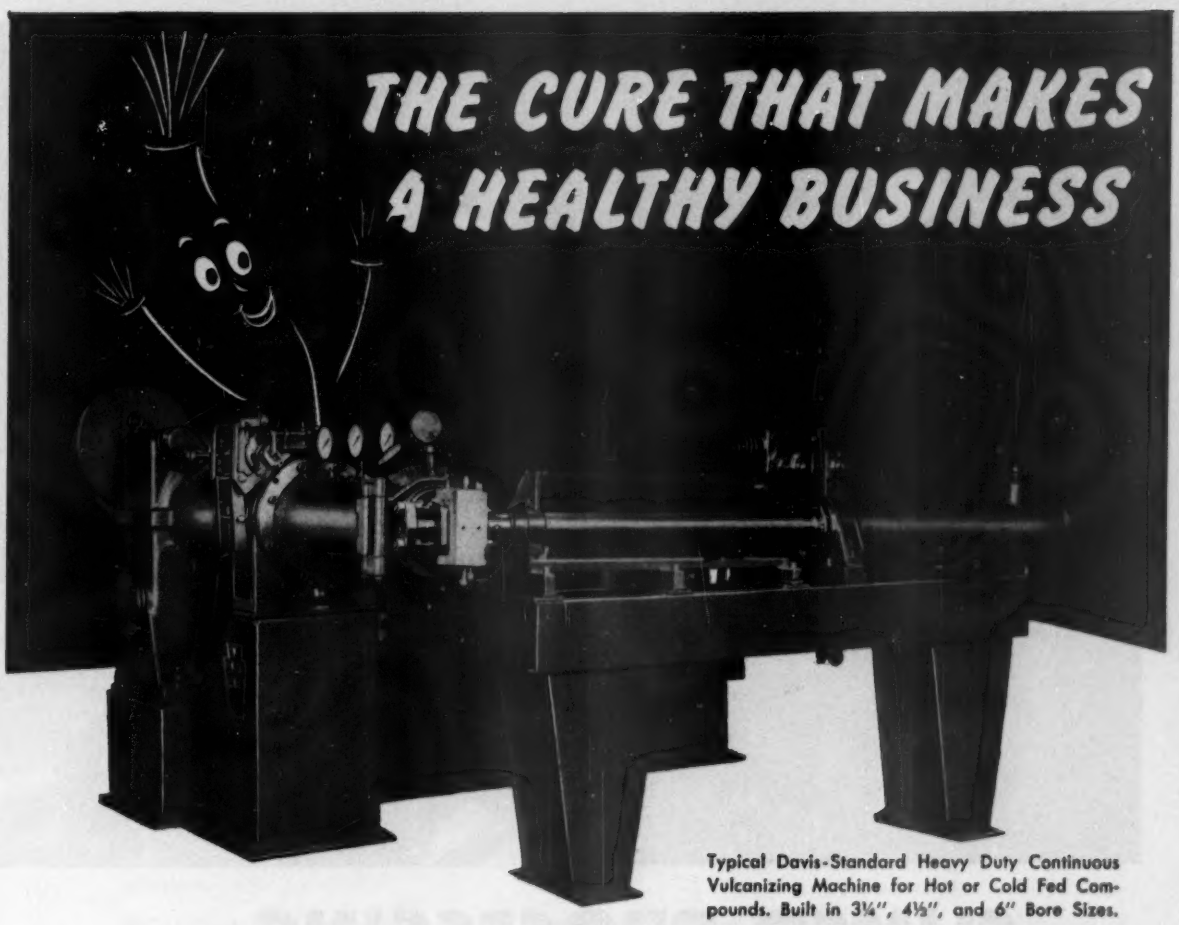
Export Division
100 East 42nd Street, New York 17, New York

REPRESENTATIVES IN PRINCIPAL CITIES

PETROLEUM DERIVED CHEMICALS SERVING BASIC INDUSTRIES

VELSICOL

THE CURE THAT MAKES A HEALTHY BUSINESS



Typical Davis-Standard Heavy Duty Continuous Vulcanizing Machine for Hot or Cold Fed Compounds. Built in 3¼", 4½", and 6" Bore Sizes.

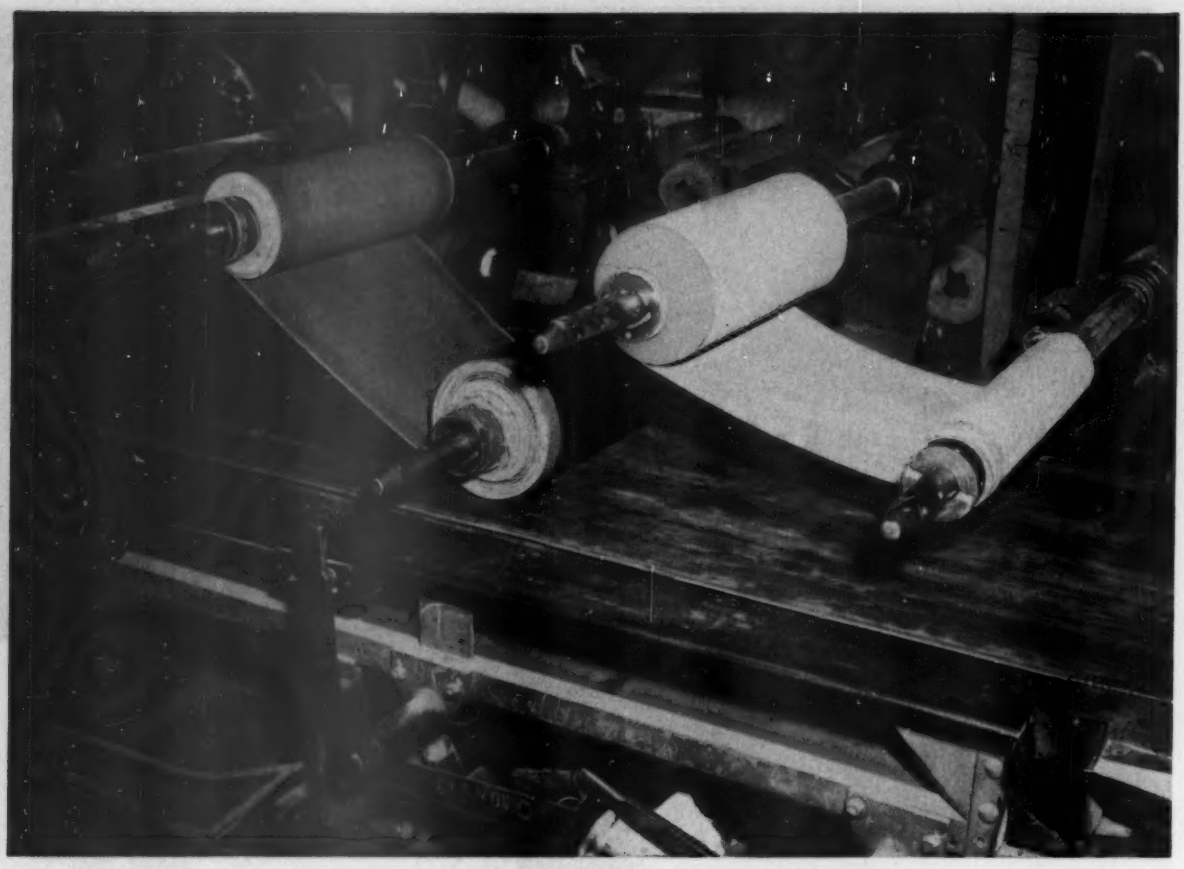
Insulated wire that is cured in a Davis-Standard Continuous Vulcanizer has a long and useful life expectancy. Its inherent stamina enables it to win loyal customers and build a healthy business for the wire manufacturer.

Equally important to the manufacturer are the ease, speed, and dependability with which the Davis-Standard Continuous Vulcanizer administers the cure. The machine is easy to set to the precise temperatures and conditions required by today's coatings, and will operate indefinitely in the severest service, without adjustment or shutdown.

For better production and better wire products, write for full information and specifications.

Our engineers welcome the opportunity to work with yours.

DS



CLIMCO PROCESSING—
To Prevent Sticking

At the bias cutter, cut bands will not stick if they are rolled into liners.

Besides preventing adhesions, Climco Processed Liners help all along the line to eliminate tie-ups that cost production time and money. Lint and ravelings, air, moisture, sunlight are excluded—oxidation, mold and bloom are prevented. Tackiness is preserved.

Labor and power are saved, stock losses are reduced and accurate gauges are maintained more easily. Latitude in compounding is enlarged.

For over 31 years, Climco Processed Liners have been used to protect stocks and take the "kinks" out of production lines. Give Climco Processed Liners a trial in your plant.

THE CLEVELAND LINER & MFG. CO.
5508 Maurice Ave. • Cleveland 27, Ohio

GET THE FULL STORY ON CLIMCO PROCESSING

Illustrated booklet tells about Climco Liners and Linerette separating paper. Tells how to get better service from liners. Write for your copy now.

LINERETTE INTERLEAVING PAPER
Treatment Contains
NO OIL OR WAX
Samples on Request

CLIMCO
PROCESSED LINERS
FOR FASTER, BETTER PRODUCTION AT LOWER COST

AIRKEM SPECIFICATIONS

#115 (oil base) for Sponge

#150 for Sponge where "Unicel" ND is blowing agent

#122 (water base) for Foam

#186 for Vinyl Film where d.o.p. is plasticiser

to reduce undesirable odors in GR-S products

Application Information

COMPATIBILITY: Will combine readily with raw mixes.

AGING: Airkem Specifications have no deleterious effect on aging properties.

TENSILE STRENGTH and RESILIENCY: Product shelf checks of more than a year's duration show that Airkem specifications in no way affect tensile strength and resiliency.

PHYSICAL PROPERTIES: Rubber products treated with Airkem Specifications are unaffected in color, foaming, setting time and density.

ODOR COUNTERACTANTS FOR THE RUBBER FIELD

Case History #12

PROBLEM: A leading producer of foam rubber mattresses and pillows was receiving complaints from dealers and consumers about offensive odors emanating from his products. Some of these odors were of low key types hardly discernible except when the user retired. Then, in direct contact, the odors became offensive.

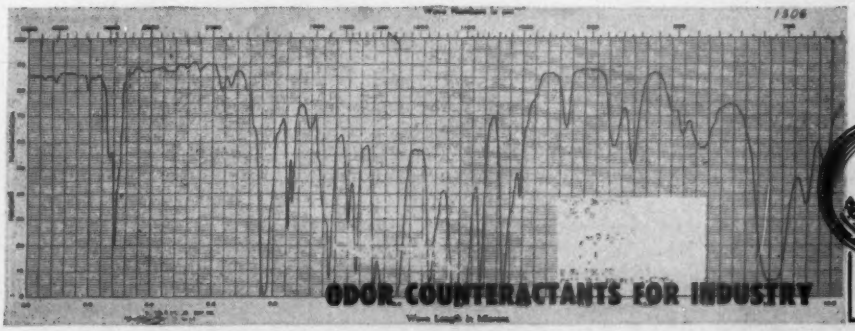
SOLUTION: Airkem engineers discovered that the odor problem was caused by a combination of contributing factors, including the GR-S latex as well as certain polysulphide accelerators. Airkem Specification 115 was added to the raw mix to the amount of ½ of 1% of the dry latex solids.

RESULT: A marked reduction in odor problems and the elimination of this source of consumer complaint. The manufacturer was able to continue with the use of GR-S Latex and other materials which contributed to high manufacturing efficiency and economy. The cost of the Airkem application is measured in pennies per mattress.

These formulations have obtained excellent results in freeing products of odor problems created by decomposed protein in slab or latex, chemical nitrogenous blowing agents, plasticisers, accelerators and stabilizers.

Do you have a problem of this nature? Airkem may be able to provide a practical, low-cost solution.

For information, please write to: **Industrial Applications Dept., Airkem, Inc., 241 E. 44th St., New York 17, N. Y.**



airkem

"...Upwards of 80 per cent of all Gulf Oil employees..."

S. A. SWENSRUD
President, Gulf Oil Corporation

"I have no hesitation in saying I believe it is a sound thing for our industry to support the Government's Payroll Savings Plan and to encourage our employees to put at least a substantial part of their savings into U.S. Savings Bonds. Upwards of 80 per cent of all Gulf Oil employees save part of each pay in E Bonds. This type of thrift is good for the nation as well as for the individual."

At the close of 1952–

- Individual Americans owned Savings Bonds totaling more than $49 billion, cash value.
- Series E Bonds outstanding—the kind bought by Payroll Savers—were more than $600 million greater than on May 1, 1951, when the bonds issued in 1941 started to mature.
- Of the $4.8 billion Series E Bonds which matured between May, 1951, and December, 1952, more than $3.6 billion (75%) were held beyond maturity, under the automatic extension plan.
- More than 77 million units of Series E Savings Bonds were bought by individuals in 1952—13% more than in the previous year.
- During every one of the past 21 months, redemptions of unmatured Series E Bonds have been well under 1% of the total amount outstanding.
- 1953 figures should be even better—more than 1,000,000 Americans joined the Payroll Savings Plan in 1952, and thousands, literally, are enrolling every day.
- Never before in the history of this or any other country have employed men and women held a reserve purchasing power of $49 billion in government securities—a cushion against emergency, a check on inflationary tendencies.

If you believe with Mr. Swensrud that "it is a sound thing for industry to support the Payroll Savings Plan . . ." and ". . . this type of thrift is good for the nation as well as the individual," phone, wire or write to Savings Bond Division, U. S. Treasury Department, Washington, D. C. Your State Director will show you how your participation can be raised to 60%, 70% or even higher.

The United States Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

RUBBER AGE

UNITED'S NEW PACKAGING DEVELOPMENT

Our ROLLPACK saves the rubber industry more than 20% in storage and shipping space.

Six-wall export bags of carbon black before and after the ROLLPAC operation
ROLLPAC
Patents Applied For
Three-wall domestic bags of carbon black before and after the ROLLPAC operation
EPC

UNITED CARBON COMPANY, INC.

CHARLESTON 27, W. VA.

NEW YORK • AKRON • CHICAGO • BOSTON

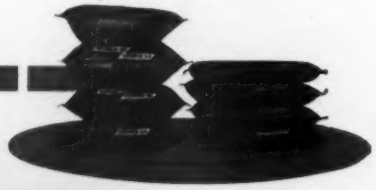
CANADA CANADIAN INDUSTRIES, LIMITED

UNITED CARBON has developed the ROLLPAC as a useful and economic aid in the handling and shipping of carbon black. The photographs appearing on the front indicate graphically the saving in storage and shipping space which the ROLLPAC bag press makes possible — a saving in excess of 20 per cent.

The flattened bags, with their greater compactness and stability, besides being easier to stack, are easier to handle on pallets and lock better in stacking, thereby shifting less in transit.

ROLLPACS have been installed in all UNITED CARBON plants.

All carbon black manufacturers are free, upon request, to use this device, on which patent application is pending, without charge. This is done so that all users of dustless carbon black may have the advantage of this space-saving method.



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CANADA: CANADIAN INDUSTRIES, LIMITED

Made-to-order GR-S latices—man-made by Naugatuck

Naugatuck Chemical's proven GR-S latices—man-made in its synthetic plant at Naugatuck, Connecticut—can be tailored to your *specific needs* to bring new *versatility* to your manufacture, new *performance* to your product.

Produced by the pioneer in synthetic latex and developer of more new varieties of synthetic rubber than all other laboratories in the industry—they include the first "cold" synthetic latex to approach traditional latices in service and wearing qualities.

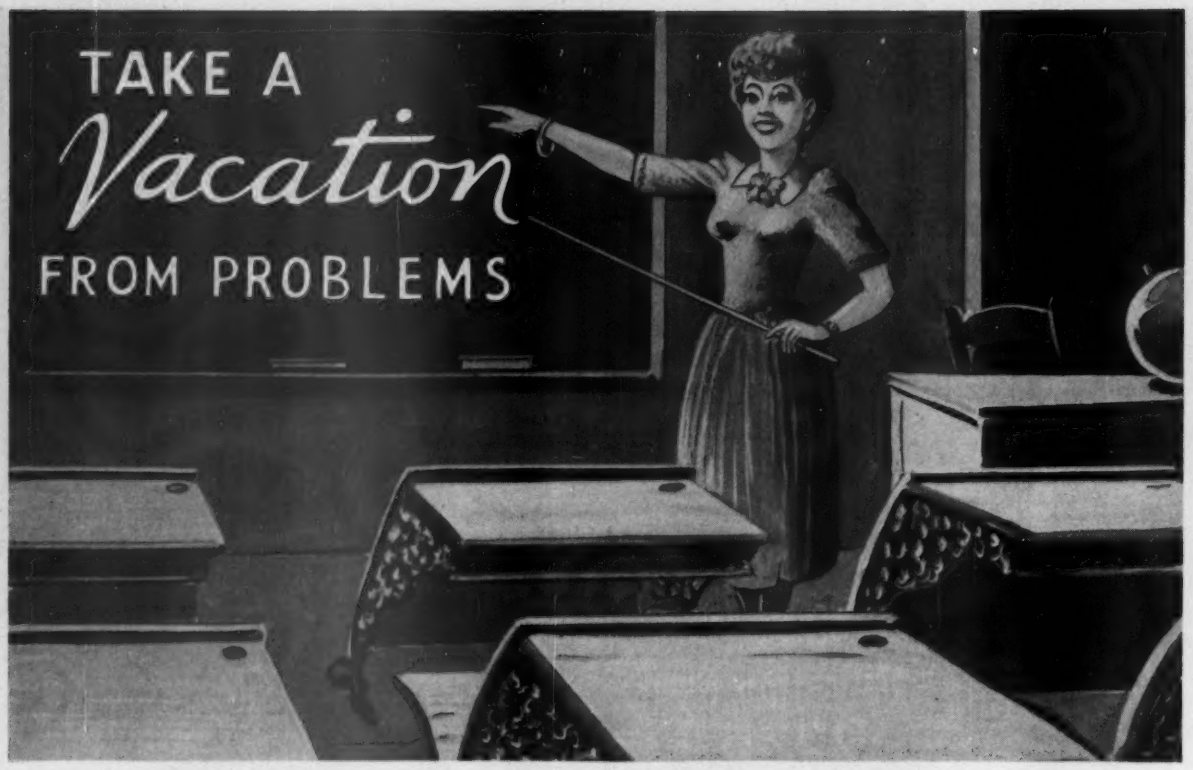
Naugatuck GR-S latices can be used to extend or substitute for natural latex in tire cord, foam sponge, carpet and upholstery backing, adhesives, general paper treatment, shoe soles, practically *all* latex applications.

Whatever *your* latex application, you can bet Naugatuck has the GR-S latex you need. For further information on GR-S latex and its most recent developments, write, on your letterhead, to address below.

Naugatuck Chemical

106 ELM ST., NAUGATUCK, CONNECTICUT
Division of United States Rubber Company

BRANCHES: Akron • Boston • Charlotte • Chicago • Los Angeles • Memphis • New York
Philadelphia • **IN CANADA:** Naugatuck Chemicals, Elmira, Ontario



Use HARCHEM Plasticizers and have no problems because:

HARFLEX® PLASTICIZERS
ARE OUTSTANDING FOR

Low Temperature Performance

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Weathering Stability

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Long Range High Temperature Service

For Plasticizers of QUALITY write:

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Manufacturers of Sebacic Acid

Canadian Distributor: W. C. Hardesty Co. of Canada Ltd., 975 Lakeshore Road, New Toronto, Canada

Improve Product Quality

WITH NEVILLE

COUMARONE RESINS

To save in manufacturing costs and at the same time improve product quality, you'll most certainly want to use Neville Resins. For these resins are products of years of research and "know-how" in helping solve rubber production problems.

Neville Coumarone Resins are extender-plasticizers, which will not tend to lower hardness, tensile, modulus or tear. They come in various grades of melting points and colors.

We can help you select the grade best suited to your purpose.

THE NEVILLE COMPANY • PITTSBURGH 25, PA.

Plants at Neville Island, Pa., and Anaheim, Cal.

PROBLEM: In order to continue offering their world-famous shoe values, Endicott Johnson must control both quality and costs of their rubber heels and soles as strictly as every other part of their shoes.

34 BALDWIN presses help Endicott Johnson keep quality high, costs low

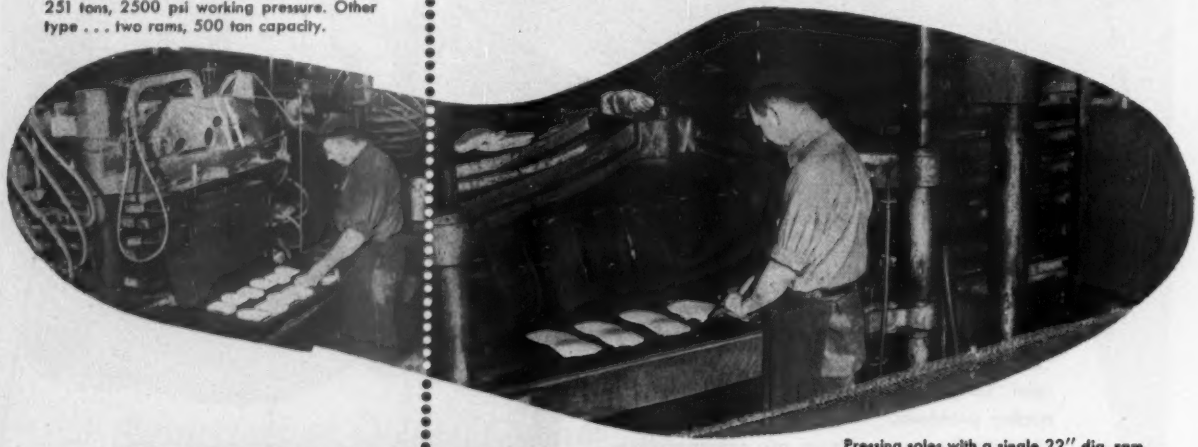
SOLUTION: Accounting for their Rubber Division's entire output of heels and soles, 34 Baldwin presses help Endicott Johnson solve their perpetual problem of how to keep giving millions of Americans in small towns and rural areas shoes so good at prices so very low.

Baldwin hydraulic steam platen presses benefit them in these two ways:

1. *Quality*—Ease and simplicity of operation and accurate control over applied pressure ensure minimum variation in quality.

2. *Savings*—For over 30 years Endicott Johnson's Baldwin presses (increasing in number steadily since 1922) have proved they are easy to maintain and seldom require any replacement parts. Their high rate of production (nearly 5000 soles per press a day and approximately 38,000 heels per press a day) with a minimum amount of rejects also cuts costs.

One of two types of heel presses in use . . . single 16" dia. ram, 4 openings, 16" stroke, 251 tons, 2500 psi working pressure. Other type . . . two rams, 500 ton capacity.



Pressing soles with a single 22" dia. ram, 475 ton, 4 opening press . . . 34" x 40" platen, 16" stroke, 2500 psi pressure.

what's your pressing problem?

You, too, can improve quality and lower costs by calling your Baldwin press engineer for help in solving your pressing problem. Or write for Bulletin 290, to Dept. 3941, Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.

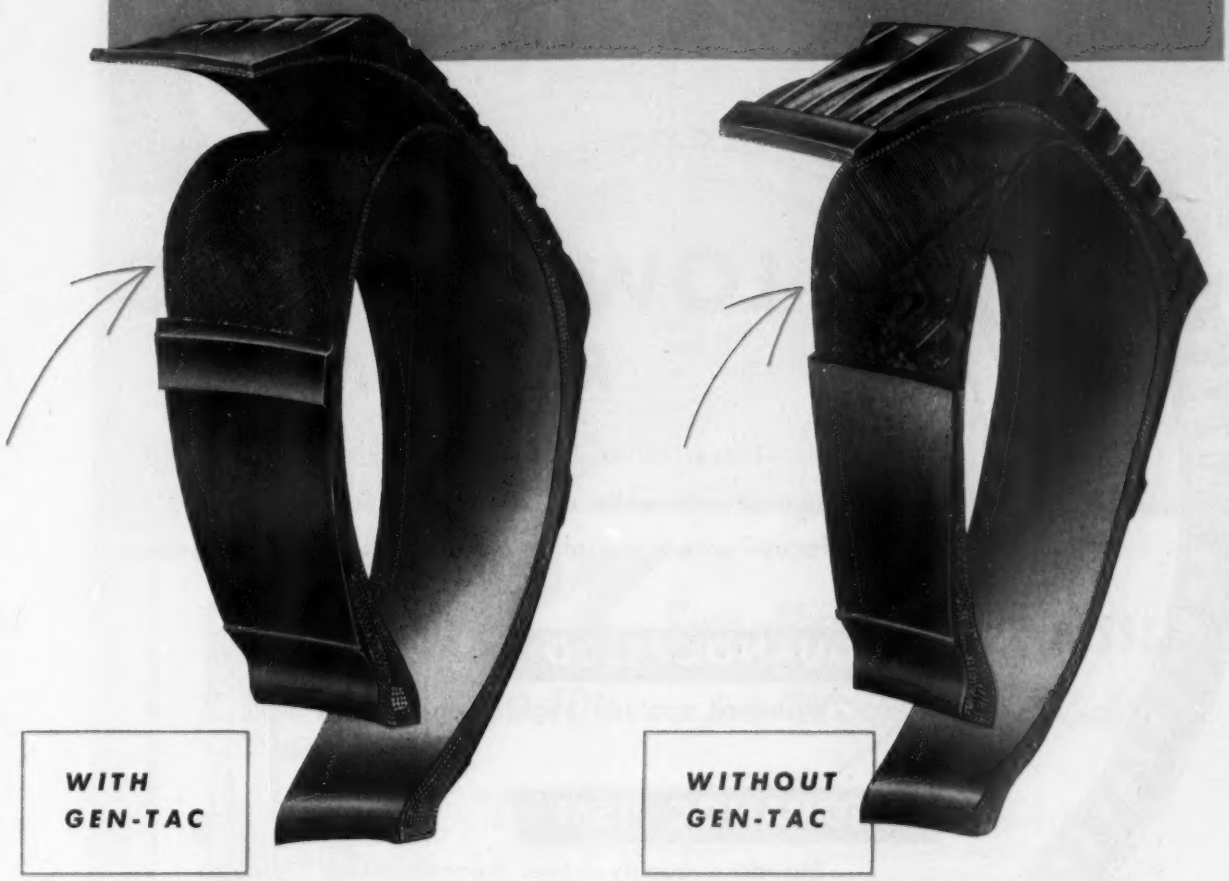
BALDWIN · BLH · LIMA-HAMILTON

BALDWIN-LIMA-HAMILTON

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

GEN—TAC*

The Proven Vinyl Pyridine Latex Makes the Difference



The adhesion of the stock to the cord is greater than the strength of the stock.

The carcass stock has separated from the cord because of low adhesion.

GTR
GENERAL TIRE & RUBBER
Chemical Products

TRY IT IN YOUR OWN TIRES
WITH YOUR OWN STOCKS

CHEMICAL DIVISION
THE GENERAL TIRE & RUBBER COMPANY
AKRON, OHIO

*Trade Mark

Make sure of Permanent Whites with PEQUANOC'S BIG 3

LOW-STAINING *RECLAIMS*

These low staining black reclaims may be used in contact with white on tire side-walls or lacquered surfaces—where migration may contribute to discoloration.

PEQUANOC #1500

Standard quality—High Mooney—Low Stain

PEQUANOC #1551

Standard quality—Low Mooney—Low Stain

PEQUANOC #1575

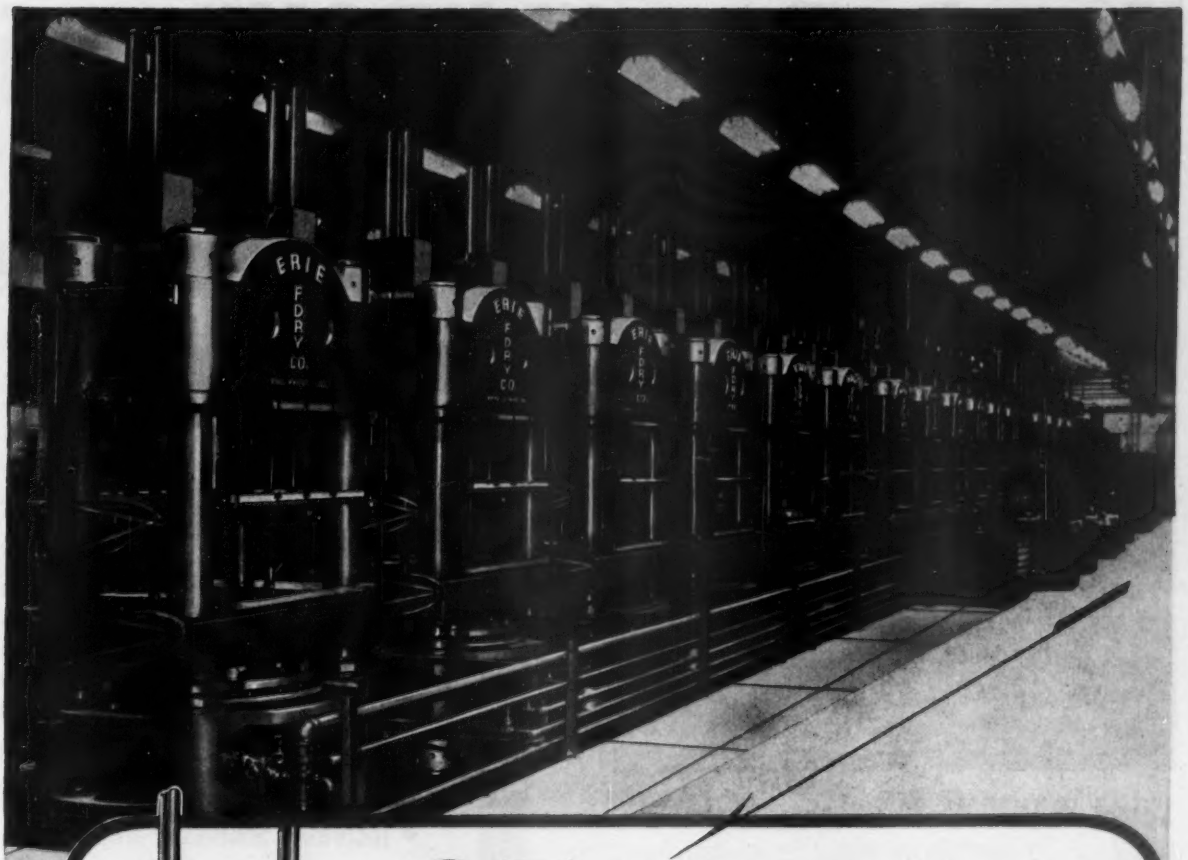
Premium Grade—Low Mooney—Maximum Stain Resistance.

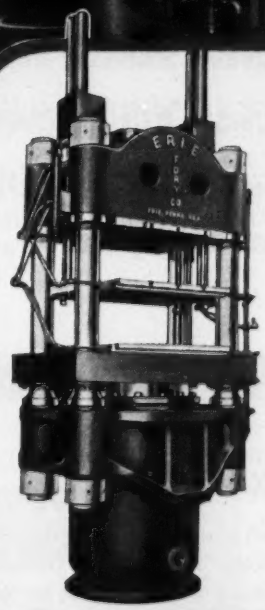
We will be glad to submit samples or further technical information.

Pequanoc Rubber Co.

MANUFACTURERS OF RECLAIMED RUBBER

MAIN SALES OFFICE and FACTORY: BUTLER, N. J.





27 ERIE HYDRAULIC PRESSES

800 TON... *for Mechanical Rubber*

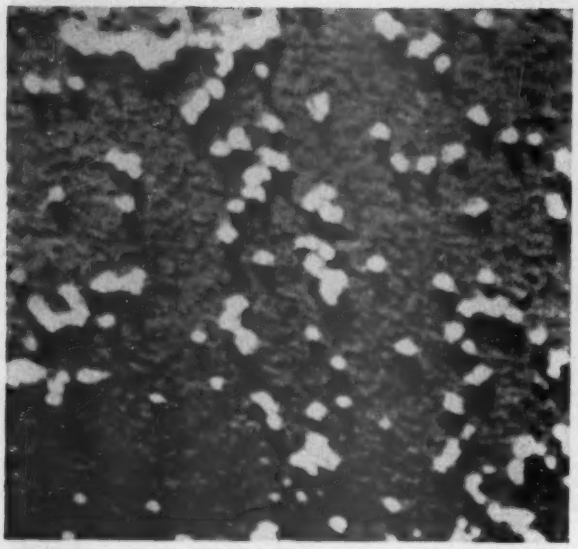
THIS battery of Erie Foundry Company 800 Ton Hydraulic precision platen presses is in uninterrupted operation in the plant of one of America's leading manufacturers of rubber products. The design, engineering and construction of these presses reflects more than a half century of experience. This long experience in design and craftsmanship results in Hydraulic Presses which deliver maximum production and top quality at minimum operating and maintenance cost. Consult with us on your Hydraulic Press requirements.

ERIE

ERIE FOUNDRY COMPANY ERIE, PENNSYLVANIA

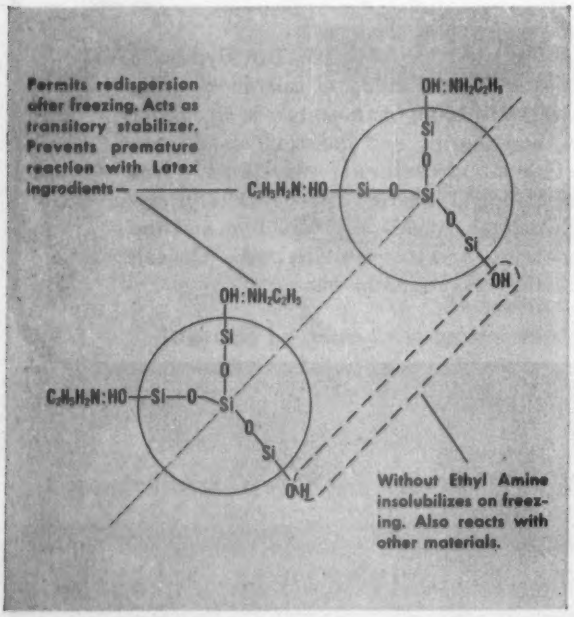
Dependable **FORGING HAMMERS • HYDRAULIC PRESSES**

How Du Pont "LUDOX" can



What "LUDOX" is

"Ludox" is a 30% colloidal solution of almost pure amorphous silica particles (SiO_2) in the form of polymerized silicic acid. The electron photomicrograph—magnification 175,000 times—shows the fineness and uniformity of "Ludox" particles. The average particle's size of 17 millimicrons is below the range of the best carbon blacks.


Permits redispersion after freezing. Acts as transitory stabilizer. Prevents premature reaction with Latex ingredients
OH:NH2C2H5
C2H5H2N:HO—Si—O—Si
Without Ethyl Amine insolubilizes on freezing. Also reacts with other materials.

Any of these valuable modifying effects can be produced by adding "LUDOX" to latex formulations

- Improved Adhesion
- Increased Stiffness
- Increased Water Resistance
- Increased Abrasion Resistance
- Decreased Dry Tack

How "LUDOX" works

The diagram at left shows surface hydroxyl groups on "Ludox" particles. These groups make the particles chemically reactive in contrast to commonly used dry fillers. This reactivity has led to many unusual properties and uses for "Ludox" in the latex field. The diagram also shows a typical "Ludox" reaction—with and without monoethylamine. The reaction with ethyl amine is useful in the stabilization of some latices containing "Ludox."

improve latex products

Your chemists can create new combinations of properties in latex-dipped goods, coatings, adhesives . . . whatever products you make—using Du Pont "Ludox"* colloidal silica. And new properties can mean new sales advantages—new markets for your products.

Here are some examples of how "Ludox" has improved latex products:

Neoprene thread was produced with a nearly doubled modulus over the entire range of elongation. Seven parts of "Ludox" were added per 100 parts neoprene latex. Modulus can be increased, too, in natural rubber films.

In neoprene-coated belting, adhesion was improved and flaking stopped by adding "Ludox." In a paper saturant, abrasion resistance was increased 20 to 40%!

A natural-rubber adhesive was doubled in strength of leather-to-leather adhesion when 20 parts of "Ludox" solids were added per 100 parts natural rubber latex solids. Such outstanding improvements have also led to the use of "Ludox" in GRS and neoprene latex adhesives and coatings.

An uncured Buna N solvent coating on cloth had no surface tack whatsoever when treated with "Ludox." In decreasing or eliminating tackiness, "Ludox" can be applied as an aftercoat or, in the case of latex, incorporated in the compound.

Neoprene films have shown exceptional increases in water resistance and decreases in water swelling upon addition of 20 parts "Ludox" solids per 100 parts neoprene latex solids.

Neoprene foam required about 20% less solids to attain a given modulus when 5 parts of "Ludox" solids were added per 100 parts dry neoprene. This saving of raw material was obtained without affecting flex life, bend flex, or compression set.

In these and other cases "Ludox" has provided combinations of properties difficult to achieve by any other means.

What's more, a little "Ludox" goes a long way.

To learn more about how silica chemistry with Du Pont "Ludox" can help improve your products, mail the coupon below, or write on your letterhead today. *REG U S PAT OFF.

Send for this informative booklet: "'LUDOX' in the Rubber Industry"

E. I. du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Department, Wilmington 98, Delaware

Name_____ Title_____

Company_____

Address_____

City_____ State_____

DU PONT "LUDOX" COLLOIDAL SILICA

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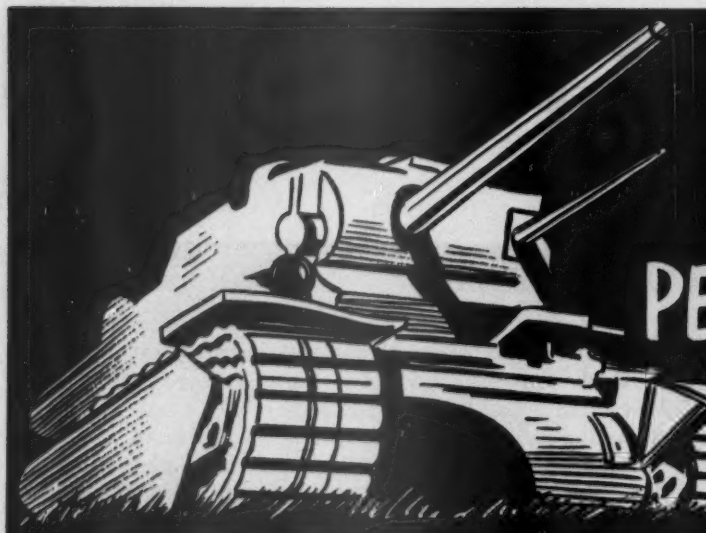
BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*



WHERE RUGGED PERFORMANCE COUNTS

TY·PLY

the RUBBER-to-METAL ADHESIVE for Bonded Rubber Tank Treads

Bonding tank-tread pads with TY-PLY is a time-proven procedure for obtaining maximum performance under the most severe conditions. Easy to use, versatile and dependable, TY-PLYs are ready-to-use bonding agents which do not require further formulating or heating by the customer.

TY-PLY Q or 3640 for bonding Natural, GR-S, and Butyl

TY-PLY S for bonding Neoprene

TY-PLY BN for bonding N-types

TY-PLY will adhere most vulcanizable rubber compounds to almost any clean metal surface

WRITE US TODAY on your specific bonding problems

Marbon

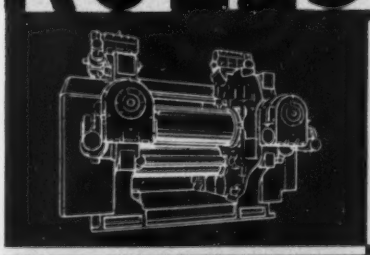
MARBON CORP.

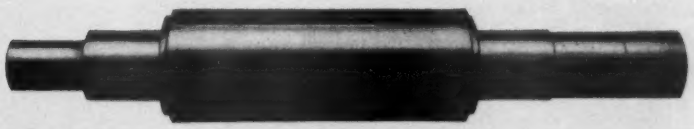
GARY, INDIANA

SUBSIDIARY OF BORG-WARNER

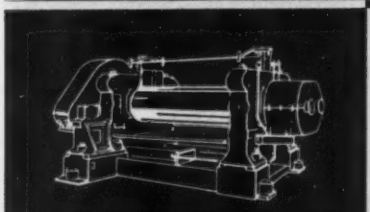
TY-PLY has stood the test of time . . . since '39

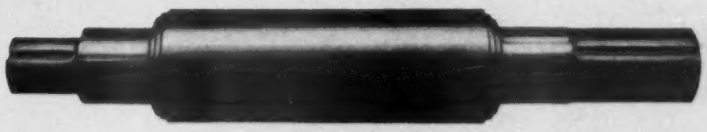
ROLLS from the shop of experience



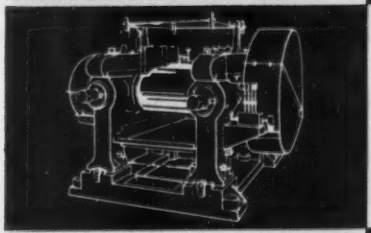


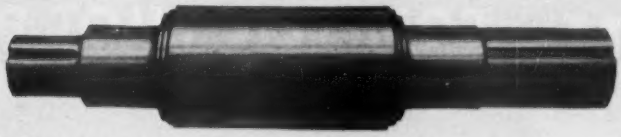
For Calenders



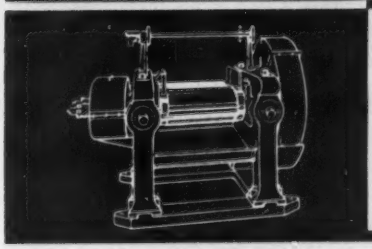


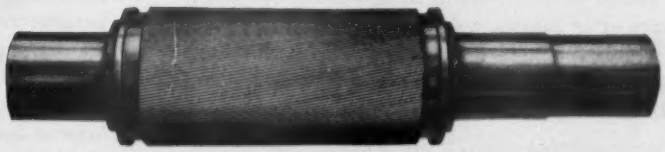
For Mills





For Refiners





For Washers and Crackers

A century of experience in manufacturing a wide variety of rolls and roll-equipped machines guides Farrel-Birmingham engineers in designing rolls for rubber and plastics processing.

For example, this experience is of vital importance in determining the proper metal mixture to be used . . . in deciding how to make a roll for most effective temperature control . . . in figuring how much crown a calender roll requires . . . in designing the corrugations for washer or cracker rolls. Experience is often the only answer to many of the problems that arise.

Farrel-Birmingham rolls are manufactured in the *world's largest specialty roll shop*—a shop equipped to make rolls of any size required, for any purpose, and in many different metal formulas of chilled iron, alloy iron, gray iron, or Meehanite metal. Here you will find specialized production facilities, close control of every step in the manufacturing process, from metallurgical analysis of raw materials to final inspection of the finished roll, and men with broad experience in every phase of roll manufacture.

Write for information about rolls for specific applications. Or, if you prefer, Farrel-Birmingham engineers will be glad to discuss your roll problems with you at any time.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.
Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
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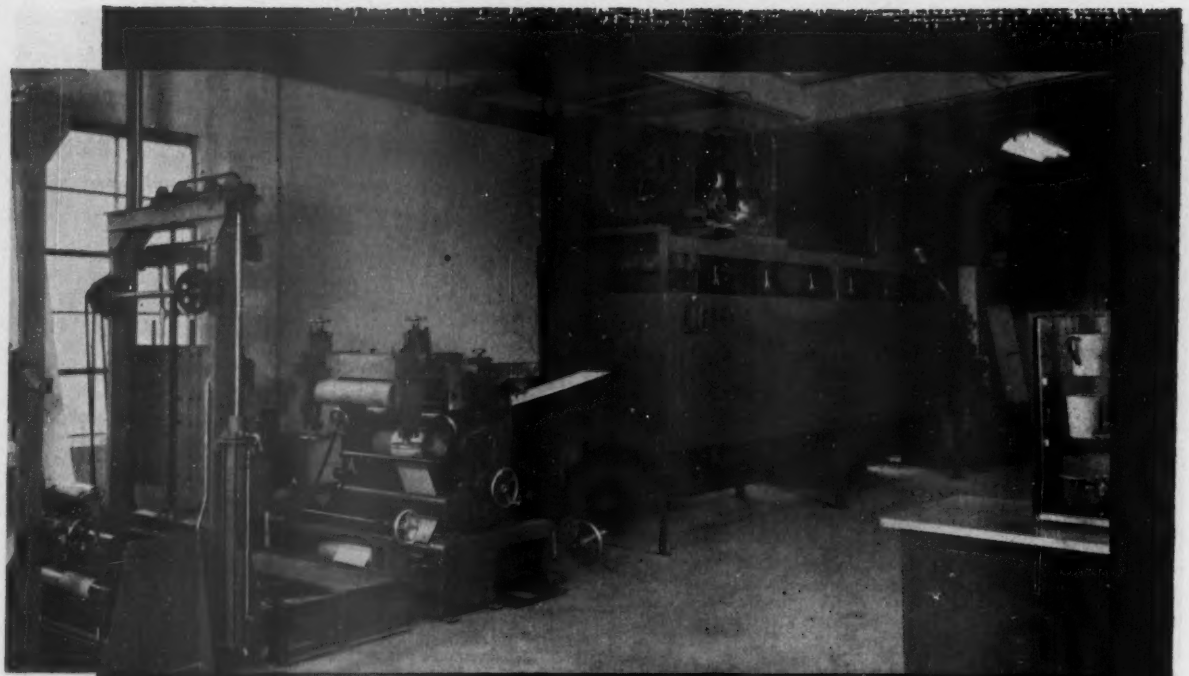
Farrel-Birmingham®



COMPLETE PILOT PLANT UNIT *for coating and impregnating webs up to 24" wide*

THIS PILOT PLANT UNIT is designed for complete processing of fabrics, papers, films and foils up to 24-inch widths, using various coating or impregnating methods and materials. It includes a complete coating unit, web-handling system and evaporator, dryer and fuser.

The coating unit comprises all the necessary equipment for complete continuous coating of any web material under controlled conditions as to time, temperature, tension, coating thickness, embossing pressure and process speeds. The coating machine head, itself, is arranged for: 1) Knife Coating, 2) Reverse Roll Coating, 3) Impregnation and Doctor Blade Removal, 4) Impregnation and Squeeze. It will handle and coat plastisols, hydrasols, organosols, rubber cements, lacquers, paints, water proofing, fire retardants, etc. Its viscosity handling range extends from water thin solutions to heavy plastisols and rubber compounds.

The web handling system provides: 1) continuous feed roll or J-box feed, 2) automatic web pretensioning, 3) adjustable continuous width expanding for fabrics, 4) reverse roll surface coating, or knife coating, or saturating dipping at constant web tension and web speed, 5) electronic coating thickness control, 6) solvent evaporating and final fusing, 7) low pressure embossing —coarse or fine pattern, 8) water cooling of web, 9) continuous edge aligning, 10) continuous takeup at constant tension and variable speed, 11) variable web speeds from 2 YPM to 32 YPM (web speeds *above or below* this basic range can be provided in the ranges of 1:1, 1:2, 1:3, or 1:4), 12) dynamometer tension readings, 13) differential stretch control system.

The evaporator, dryer and fuser provide: 1) dual zone heating with precise individual control, 2) two side heating of the web, 3) temperature range in each zone extending from 100°F. to 650°F., 4) constant tension or stretch control during drying, 5) variable zone length in either zone, 6) variable air volumes and velocities on each zone.

This entire pilot plant unit is available now, completely assembled and ready for demonstration runs. For demonstration appointment or further information, write:

INDUSTRIAL OVENS, INC.

13825 TRISKETT ROAD CLEVELAND 11, OHIO

Prevent scorching even in hot weather with non-discoloring

RETARDER PD

RETARDER PD IS A PROVEN SAFEGUARD against premature vulcanization or scorching at processing temperatures. This fine white powder has little or no retarding effect at curing temperatures.

RETARDER PD is practically non-discoloring, produces excellent results in white and light-colored stocks and does not affect the physical or aging properties of vulcanized stocks.

RETARDER PD is recommended for use with the thiazole or activated thiazole type accelerators.

Send for a sample and the Calco Technical Bulletin on RETARDER PD.

SALES REPRESENTATIVES AND WAREHOUSE STOCKS: Akron Chemical Company, Akron, Ohio • Ernest Jacoby and Company, Boston, Mass. • Herron & Meyer of Chicago, Chicago, Ill. • H. M. Royal, Inc., Los Angeles, Calif. H. M. Royal, Inc., Trenton, N. J. In Canada: St. Lawrence Chemical Company, Ltd., Montreal and Toronto

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AMERICAN Cyanamid COMPANY

CALCO CHEMICAL DIVISION

INTERMEDIATE & RUBBER CHEMICALS DEPARTMENT

BOUND BROOK, NEW JERSEY

OSBORN

LOOK FOR THE NAME "OSBORN"

. . . to get the BEST in brushes

TO be Sure you get unsurpassed quality in brushes, all you need to do is specify OSBORN. You can buy OSBORN brushes with confidence because their workmanship and materials are backed by more than 60 years' service to Industry . . . throughout the world. There is a complete line of paint, maintenance, and power brushes at your nearby Industrial Distributor. Write for free pocket catalog. *The Osborn Manufacturing Company, Dept. BB-2, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

SILENE EF®

your key to QUALITY and SAVINGS

- Are you searching for a white reinforcing pigment that will give your products excellent physical properties?
- Do you want to be sure of highest quality in white or colored natural rubber compounds . . . and in GR-S stocks?
- Wouldn't you say that a pigment that provides the above two advantages—*and saves you money on volume cost*—is well worth considering in your operations?

Write today for further information on Silene EF, free technical bulletins, or experimental working samples.

Columbia-Southern's family of white reinforcing pigments

SILENE EF
Finely divided, precipitated, hydrated calcium silicate.

CALCENE TM
Coated precipitated calcium carbonate of fine particle size.

CALCENE NC
Non-coated precipitated calcium carbonate of fine particle size.

HI-SIL and HI-SIL "C"
Finely divided precipitated, hydrated silicon dioxide.

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SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
420 DUQUESNE WAY, PITTSBURGH 22, PENNSYLVANIA

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"Mother's asleep now, son," Dad told him. "She'll be asleep a long, long time. It's kind of like going away. We'll have to learn to get along without her, Johnnie."

To a statistic named Johnnie

Who's Johnnie? Just one of the 175,000 children under eighteen here in the United States who have lost a mother to cancer.

Statistics are a little too big for a boy this small to understand. Even the hopeful ones about cancer—and there are more every year.

More and more today—cancer can be cured

Patients are being cured who could not have been saved—even five years ago. In 1952, some 70,000 with cancer were saved.

And this number could have been doubled, if treatment in all the cases had been begun in time.

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Not for Johnnie, to be sure.

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Strike back—give to the American Cancer Society

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Please send me free literature about cancer.
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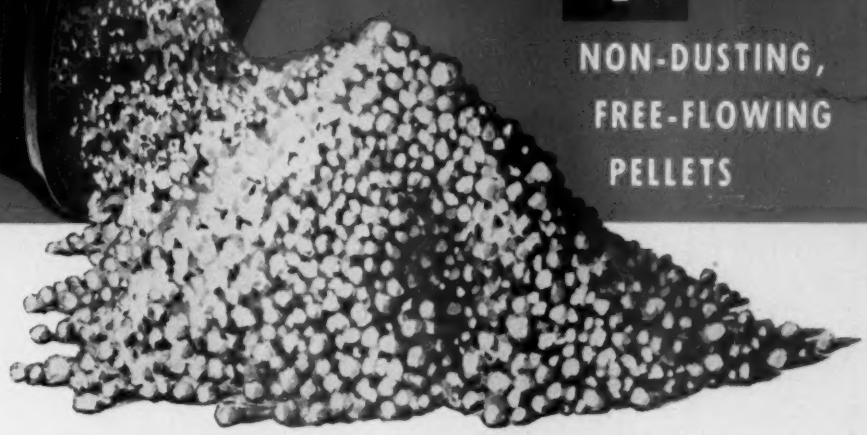

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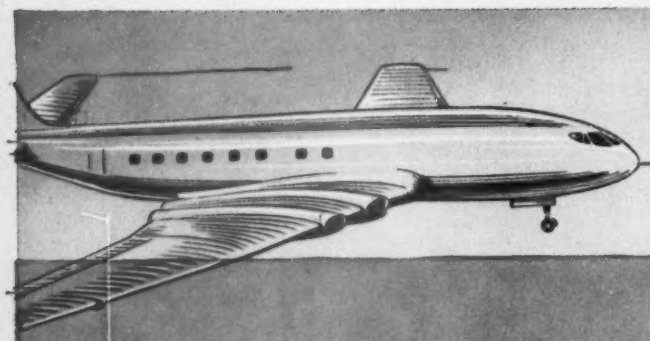

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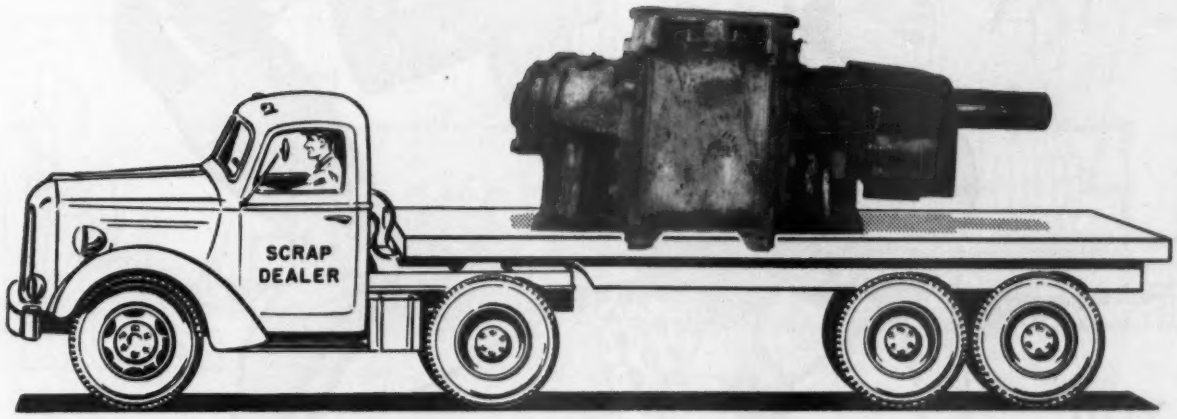

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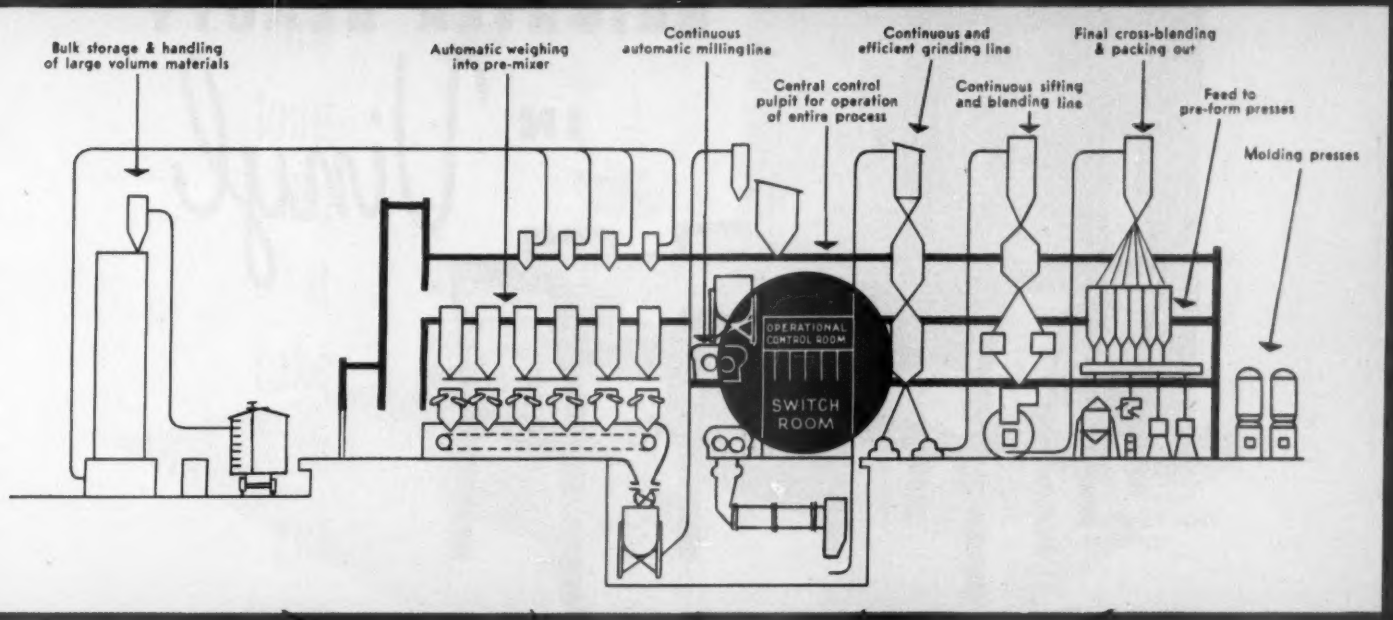
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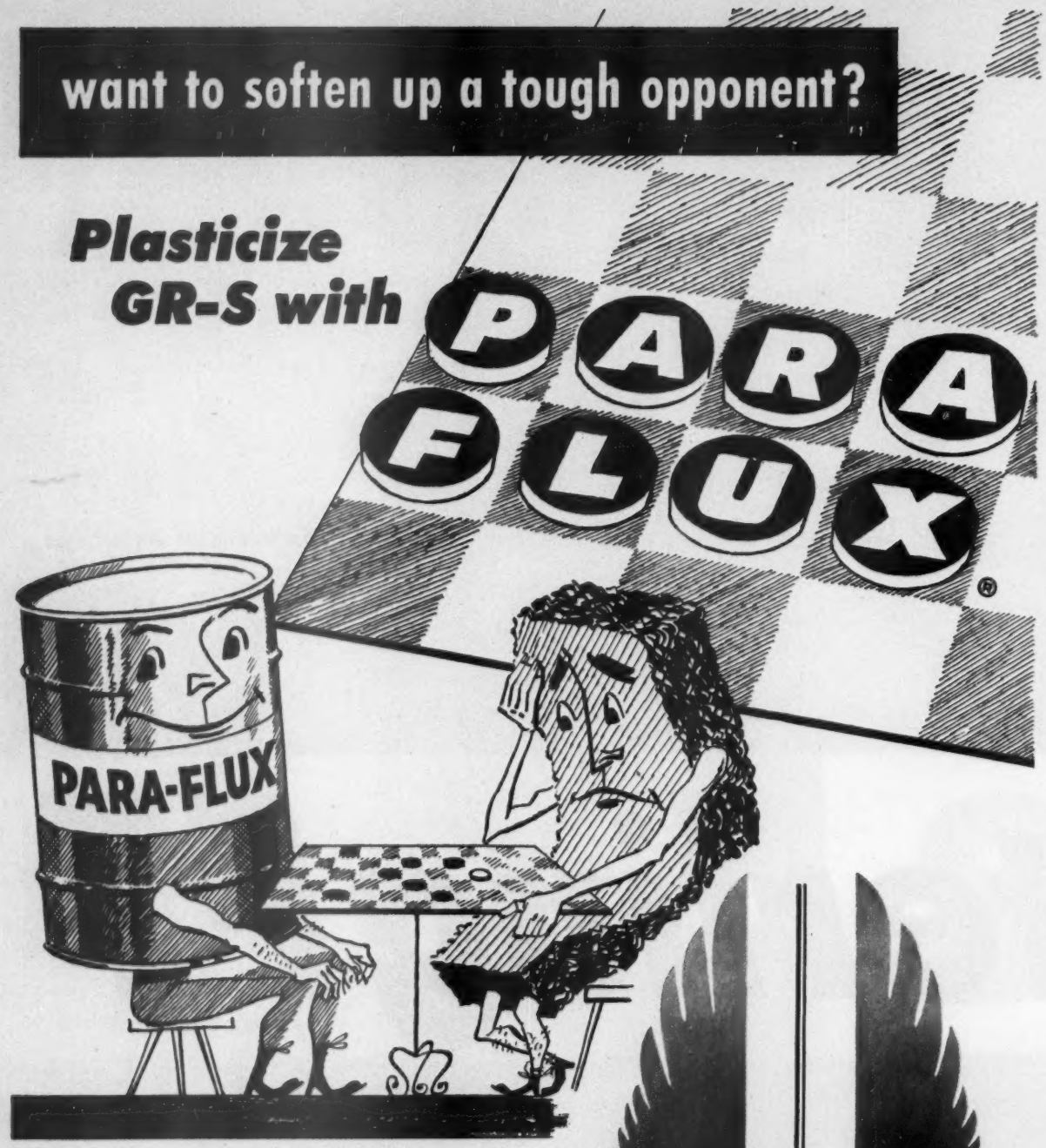

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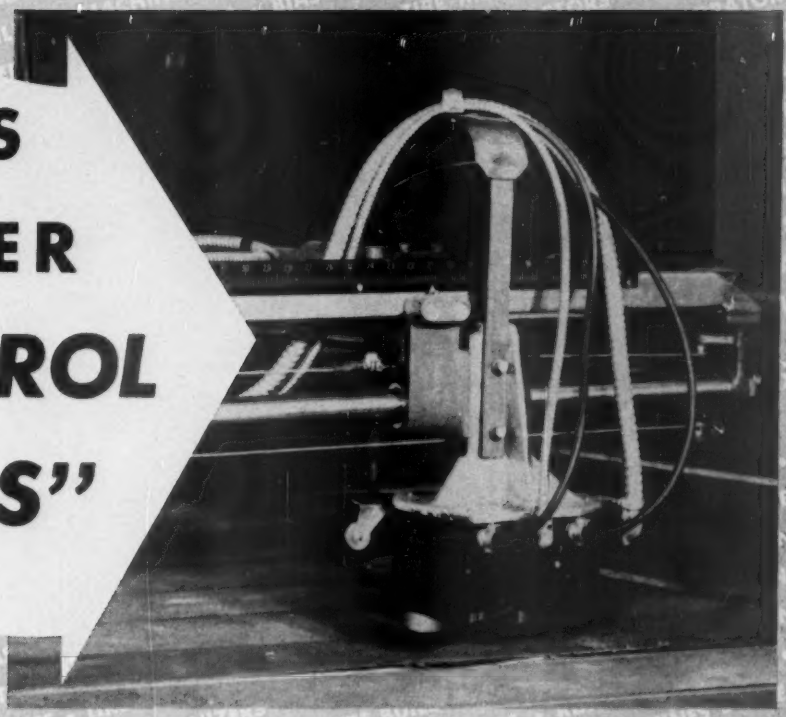

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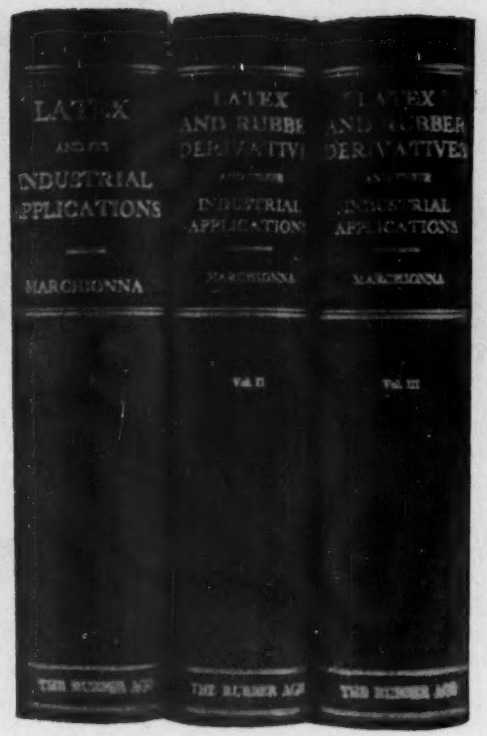

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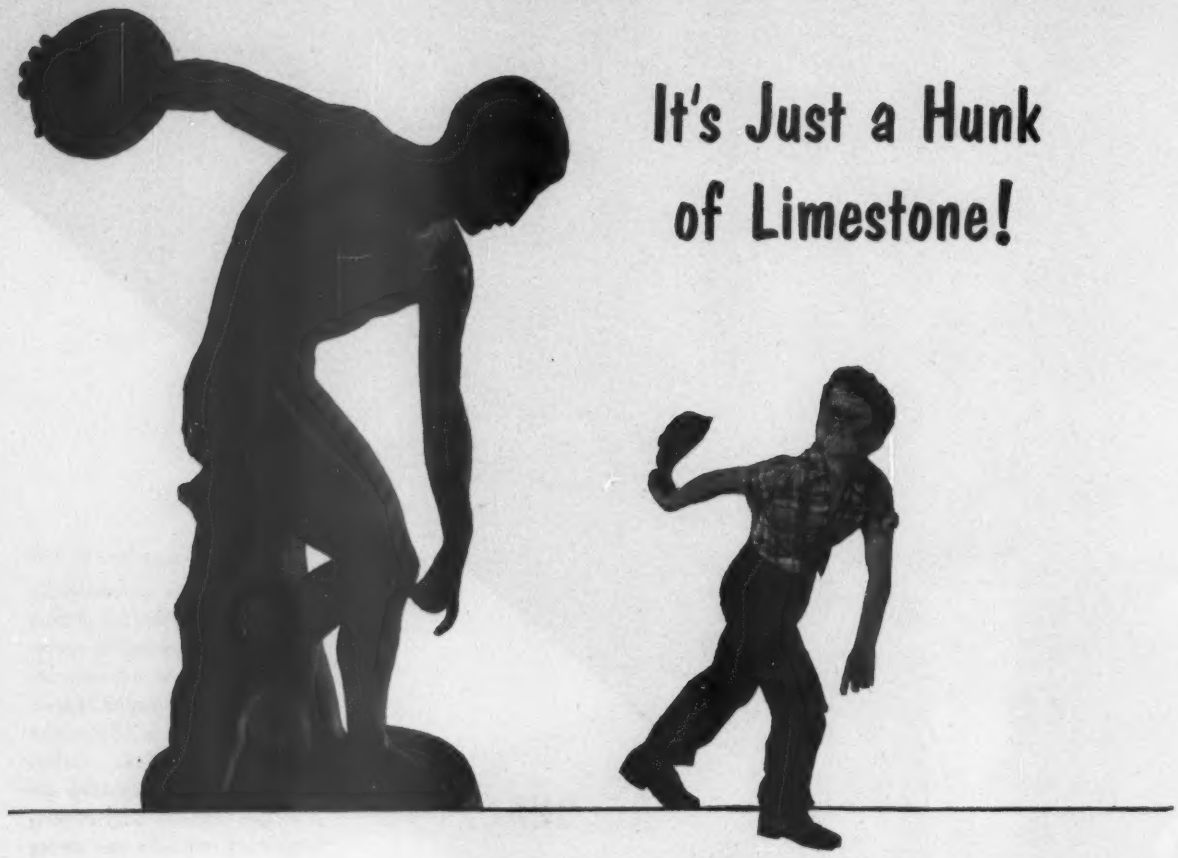

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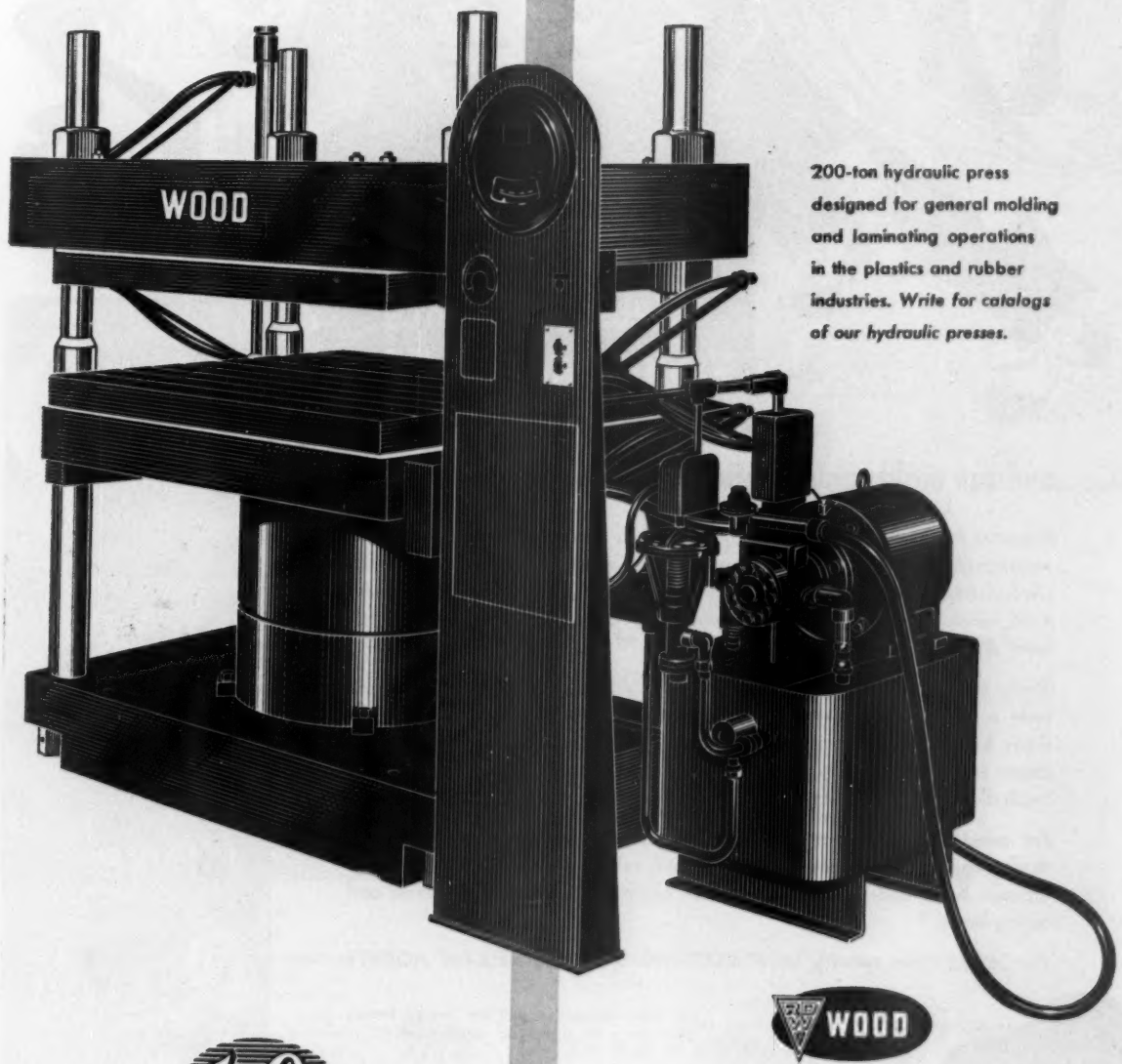

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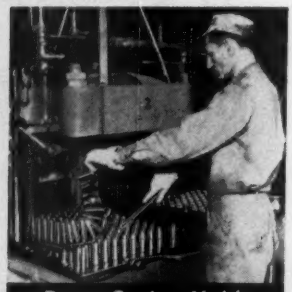
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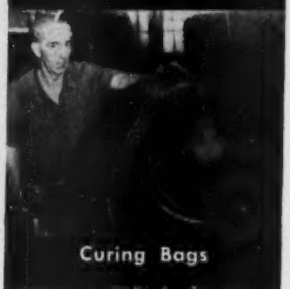
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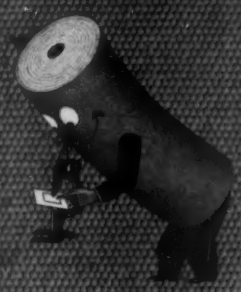

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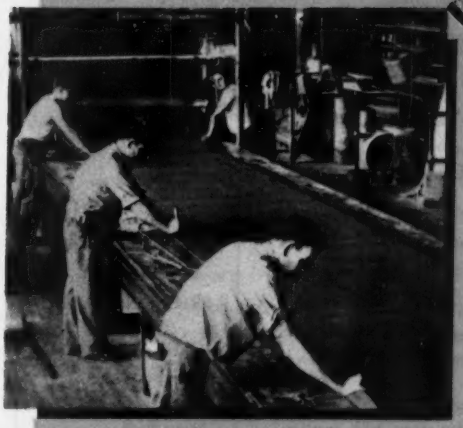

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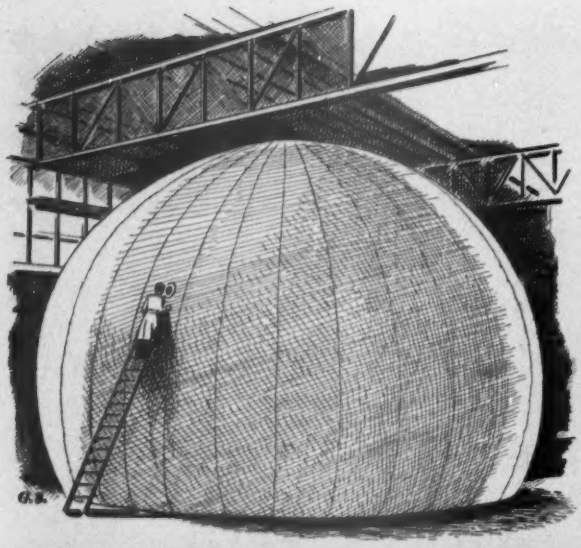

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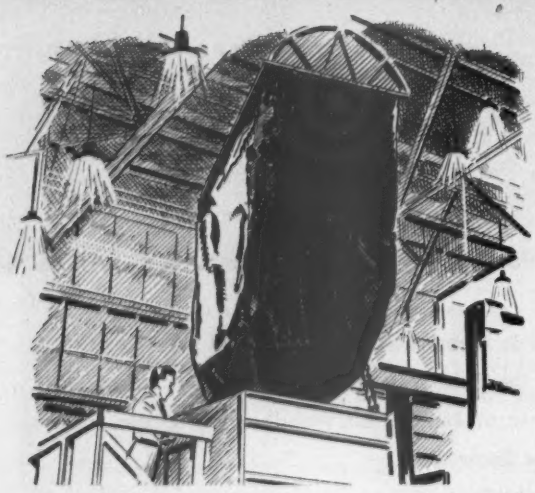

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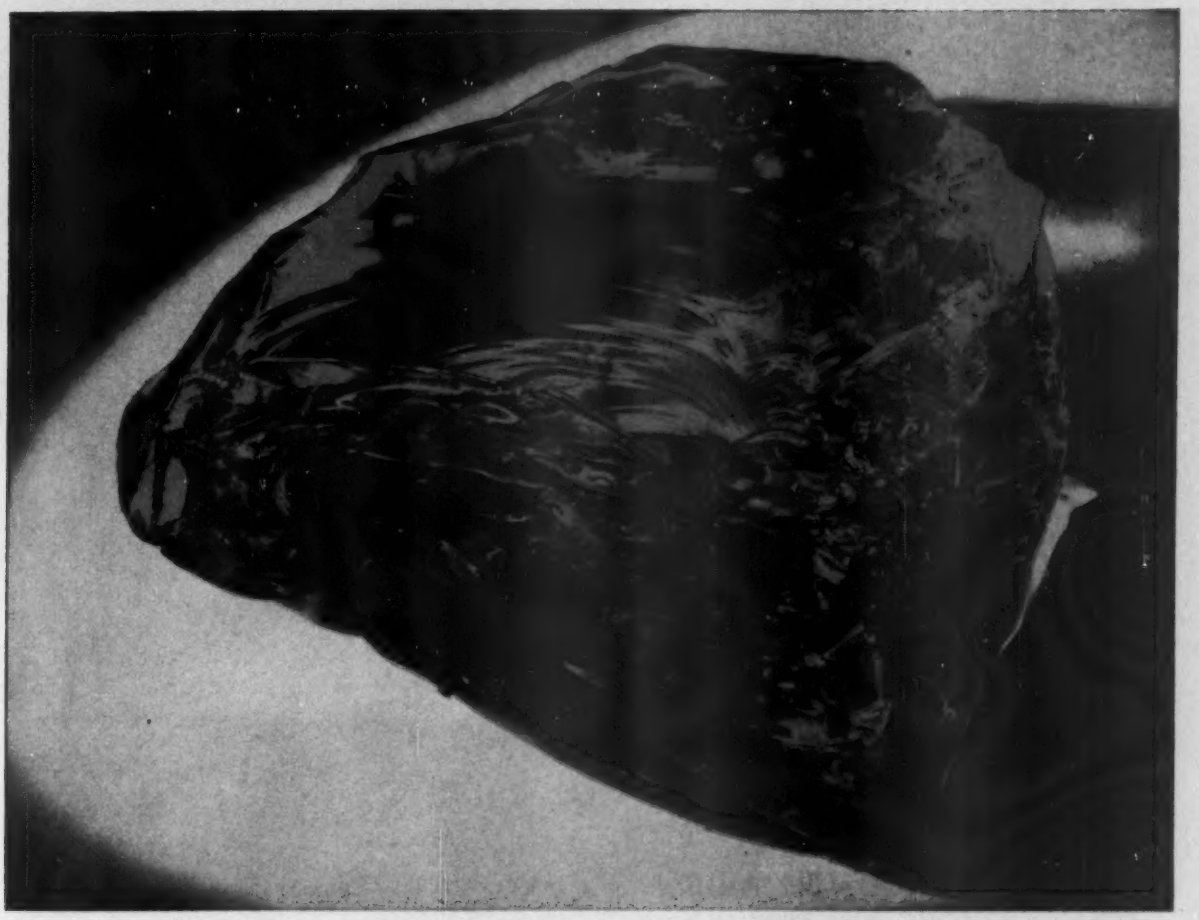

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RUBBER AGE

Vol. 73, No. 3 JUNE, 1953

The Effect of Di-Ester Lubricants on Aircraft Rubber Parts

By R. M. HARPER

Rubber Technologist, Aeronautical Materials Laboratory, Naval Air Experimental Station, Philadelphia 12, Penna.

DURING the past few years military aircraft have made increasing use of new type greases containing substantial amounts of dibasic organic acid esters. These lubricants, which are referred to as di-esters, are used in ball, roller and needle bearings, gears, and on sliding and rolling surfaces of such equipment as instruments, cameras, electronic gear and aircraft control systems. They are particularly suitable for equipment which must operate at very low and high temperatures. In these respects they are superior to comparable petroleum base lubricants.

Unfortunately, from the rubber compounder's viewpoint, di-esters swell or deteriorate most oil-resistant rubber materials to a much greater extent than the petroleum-base lubricants they replace. Service activities, after conversion to the new lubricants, have reported malfunctioning of aircraft accessories due to excessive rubber swelling. Synthetic rubber "O" ring seals, washers, boots, sleeves, and other items are usually designed to perform with only very slight volume change when used with petroleum lubricants. Many of these same rubber items, when used with di-esters, swell to such an extent that they restrict operation of moving parts or fail due to excessive deterioration. Usually the difficulty can be corrected by changing to a more suitable type of rubber or designing the installation to accept greater rubber swell.

Most of the data presented herein are concerned with the effect of di-ester greases and a major component of these greases, di-2-ethyl hexyl sebacate, on various oil-resistant rubber compounds at temperatures up to 100°C. Di-2-ethyl hexyl sebacate and similar esters of dibasic organic acids are used in formulating greases for conformance to the following specifications:

Military Specification MIL-G-3278 Grease; Aircraft and Instruments (for low and high temperatures). This grease is intended for general use on aircraft and instruments. It will permit operation of equipment at —65°F. and will lubricate anti-friction bearings operating continuously at temperatures as high as 250°F. and for short periods as high as 300°F.

Military Specification MIL-G-7118 Grease; Aircraft Gear and Actuator Screw (for low and high temperatures). This grease is intended for general use on aircraft gears, actuator screws and other equipment with a high load-carrying capacity. It is not intended for use with anti-friction bearings. This grease contains an extreme pressure additive. It will permit operation of equipment at —65°F. and can lubricate continuously at 250°F. and for short periods at 300°F.

Military Specification MIL-G-7421 (USAF) Grease; Extreme Low Temperature. This grease is intended for extreme low temperature use on low torque aircraft

Note: The opinions or assertations contained in this article are the private ones of the author and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

TABLE I—TYPICAL COMPOSITION OF A DI-ESTER GREASE

Lithium Stearate (gelling agent)	20%
Liquid Lubricant (may contain 85 to 100 percent di-ester and the remainder mineral oil)	78%
Miscellaneous Materials (inhibitors, antioxidants, additives, etc.)	2%

equipment. It will permit operation of such equipment at —100°F. and will lubricate anti-friction bearings, operating continuously at temperatures up to 225°F. and for short periods up to 250°F.

Lubricant compositions are usually not limited by these specifications, provided the material meets performance test requirements. Table I lists a typical composition for a grease conforming to Specification MIL-G-3278.

Test Procedures

Unless indicated otherwise, all tests were conducted in accordance with A.S.T.M. Standards on Rubber Products (1951 edition).

TABLE II—TEST RECIPES AND PHYSICAL PROPERTIES

MIL-R-6855 Class I		MIL-R-6855 Class II	
Hycar OR-25 (NS)	100.0	Neoprene W	100.0
Zinc Oxide	5.0	Heliozone	1.0
Agerite Resin D	2.0	Neozone A	2.0
Stearic Acid	1.0	Magnesium Oxide	2.0
Pelletex SRF	65.0	Thermax	115.0
Flexol 3GH	10.0	Plasticizer SC	20.0
Sulfur	1.0	Zinc Oxide	5.0
Thionex	0.4	NA-22	0.5
Cured 30 min. at 310° F.		Cured 30 min. at 310° F.	
Physical Properties			
Tensile Strength (psi)	2110	Tensile Strength (psi)	1950
Elongation (%)	410	Elongation (%)	350
Durometer	58	Durometer	58

MIL-P-5516 Class B *

Tensile Strength (psi)	1810
Elongation (%)	210
Durometer	66

* Commercial material made with Paracril 18.

Volume change was determined by the Jolly balance procedure. For the grease immersions, specimens were contained in covered Petri dishes and conditioned in a Geer oven maintained at 100°C. Specimens were cooled to room temperature for 30 minutes before taking volume readings.

Rubber compounds selected for test represent the common types of oil-resistant rubber now being procured for aircraft use. Formulations and cure data for stocks conforming to Specification MIL-R-6855 Classes I and II are given in Table II. The composition of the stock conforming to Specification MIL-P-5516, which was compounded by one of the qualified "O" ring manufacturers from Paracril 18 polymer, is unknown.

Immersion Tests

Comparative effects of various di-ester and petroleum-base lubricants on volume change and hardness of oil-resistant rubber are listed in Table III. It should be noted that petroleum-base lubricants affected hardness and volume only slightly. On the other hand, the di-esters swelled and softened all three stocks to a much greater degree. The behavior of the MIL-R-6855 Class II, Neoprene W compound, in particular, would prevent its use with di-esters.

Comparison of data in Table III indicates that composition of the liquid lubricant components of each grease influences rubber swelling properties. Lubricants 2, 3 and 7 contain a blend of hydrocarbon and di-ester oils. These greases swelled all stocks less than those containing 100% di-ester.

Differences in swelling due to the presence of hydrocarbon oils are not so apparent with Paracril 18 and Neoprene W stocks. Both are swelled by hydrocarbons as well as di-esters whereas Hycar OR-25 compounds are generally swelled very little by the hydrocarbons and to varying degrees by the di-esters. The MIL-R-6855 Class I stock (Hycar OR-25) swelled in the 10 to 11 percent range on immersion in hydrocarbon oil containing lubricants 2, 3 and 7. Greases 1, 4, 5, 6, 8 and 9, which contain 100 percent di-ester, swelled this stock from 13 to 31 percent.

This wide spread in swelling values is considered to be a function of the amount and type of di-ester contained in each grease. For design purposes, it would be highly desirable to provide a closer control over rubber swelling properties of these greases. Di-ester lubricant specifications should contain rubber swelling index

TABLE III—CHANGE IN HARDNESS AND VOLUME AFTER IMMERSION FOR 70 HOURS AT 100°C.

Lubricant No.	Specification No.	Type Oil Base Used	MIL-P-5516 Class B (Paracril 18) Hardness	MIL-P-5516 Class B (Paracril 18) Volume	MIL-R-6855 Class I (Hycar OR-25) Hardness	MIL-R-6855 Class I (Hycar OR-25) Volume	MIL-R-6855 Class II (Neoprene W) Hardness	MIL-R-6855 Class II (Neoprene W) Volume
1	MIL-G-3278	Di-ester oil	—10	+33.3	— 8	+15.4	—24	+92.3
2	MIL-G-3278	Di-ester and hydrocarbon oil	— 7	+24.9	— 4	+10.0	—18	+75.9
3	MIL-G-3278	Di-ester and hydrocarbon oil	— 9	+27.7	— 5	+11.3	—20	+80.7
4	MIL-G-3278	Di-ester oil	— 9	+30.9	— 7	+14.9	—20	+82.8
5	MIL-G-3278	Di-ester oil	—12	+40.6	—10	+23.2	—22	+89.4
6	MIL-G-3278	Di-ester oil	— 9	+34.3	— 5	+15.3	—19	+81.8
7	MIL-G-3278	Di-ester and hydrocarbon oil	— 5	+23.3	— 5	+10.3	—17	+73.3
8	MIL-G-7421	Di-ester oil	—10	+48.2	—11	+30.8	—17	+88.9
9	MIL-G-7118	Di-ester oil	— 8	+27.4	— 9	+13.0	—18	+78.2
10	————	Di-2-ethyl hexyl sebacate *	—10	+30.1	— 6	+11.7	—17	+75.8
11	MIL-L-3545	Hydrocarbon oil	+ 7	— 4.0	+ 2	— 0.9	0	+ 0.9
12	MIL-L-7711	Hydrocarbon oil	——	——	— 1	— 0.5	— 6	+15.2

* Rohm and Haas Company Plexol 201.

TABLE IV—EFFECT OF SPECIFICATION AN-O-11 OIL ON NITRILE RUBBERS

Base Polymer	Acrylonitrile Content of Base Polymer (%)	Initial Properties: Tensile Strength (psi)	Initial Properties: Ultimate Elongation (%)	Initial Properties: Durometer Hardness	After Immersion for 14 Days in Specification AN-O-11 Oil at 70° C.*: Tensile Strength (% Change)	After Immersion for 14 Days in Specification AN-O-11 Oil at 70° C.*: Durometer Hardness (Change)	After Immersion for 14 Days in Specification AN-O-11 Oil at 70° C.*: Volume Change (%)
Hycar OR-15	39.0	2470	350	66	— 1	+ 7	+ 2
Perbunan 35	36.6	2070	370	65	+10	+ 4	+ 4
Hycar OR-25	32.8	2040	330	63	— 7	+ 3	+ 8
Perbunan 26	28.6	1900	380	62	—21	— 7	+22
Perbunan 18	20.1	1730	330	61	—47	—19	+71

* Major component—ester of dibasic organic acid such as di-2-ethyl hexyl sebacate.

test requirements in order that packing gland and installation tolerances can be standardized regardless of the particular brand of grease used.

Immersion test data obtained with petroleum-base lubricants 11 and 12 have been included in Table III for comparison. All three rubber stocks are suitable for use with these petroleum type greases although slight shrinkage due to plasticizer extraction with the MIL-P-5516 Class B material and swelling up to 15 percent or more with the MIL-R-6855 Class II neoprene may be encountered.

Volume change of the two nitrile rubber stocks indicated that medium acrylonitrile content polymers such as Hycar OR-25 are affected less than low acrylonitrile content polymers represented by Paracril 18. In a related investigation *(1)*, the effect of di-ester oil on synthetic rubber compounds was determined. Data from that investigation are reproduced in Table IV. An identical recipe (Table V) was used for all stocks. Compounds are arranged in order of decreasing nitrile content using values determined by Wiley and Brauer *(2)* for acrylonitrile content of the respective polymer.

These data indicate that resistance to di-ester oil increases as acrylonitrile content is increased. However, high acrylonitrile content polymers are usually unsuitable for aircraft applications due to their relatively poor low temperature properties. Probably medium acrylonitrile content polymers, such as Hycar OR-25 or Paracril 26, provide the best balance between di-ester resistance at temperatures up to 100°C. and low temperature flexibility. It should be recognized that the physical properties listed in Table IV do not represent optimum values attainable with these nitrile rubbers. Tighter cures, higher black loadings and increased ester plasticizer will provide better retention of properties after immersion in di-esters.

TABLE V—TEST RECIPE

(Cure: 30 mins. @ 310° F.)

Polymer	100.0
Zinc Oxide	5.0
Stearic Acid	1.0
SRF Black	75.0
Plasticizer A-118	25.0
TP90B	5.0
Benzothiazyl Disulfide	1.5
Sulfur	1.5

Because of their good high temperature working stability, aircraft greases do not lend themselves readily to rubber immersion tests. None of the greases used melted or flowed at the test temperature (100°C.), which made manipulation of test specimens difficult. It was

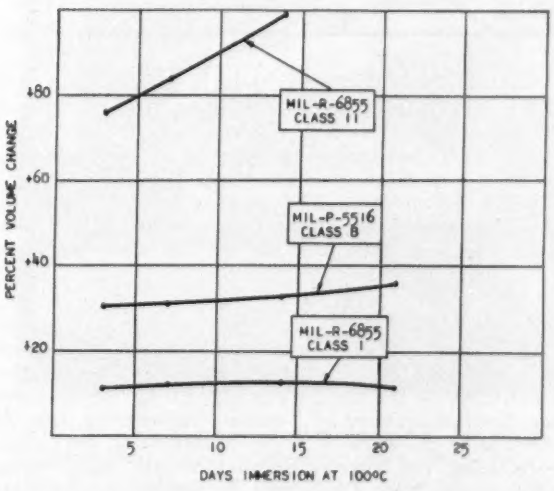

FIG. 1—Effect of di-2-ethyl hexyl sebacate on volume.

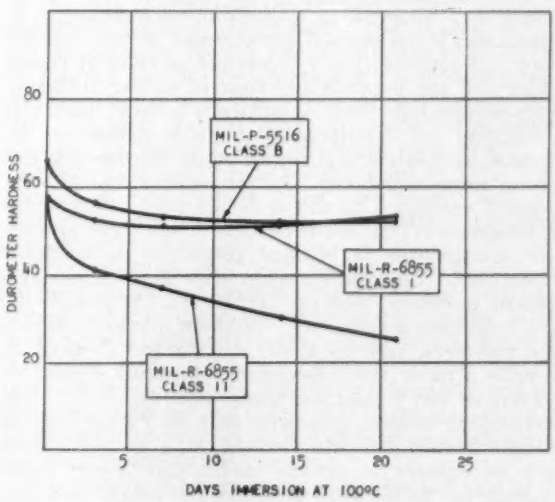

FIG. 2—Effect of di-2-ethyl hexyl sebacate on hardness.

necessary to repack the specimens in the grease at least twice each day during immersion tests in order to obtain consistent volume change readings. To facilitate experimental procedures, further tests were conducted in di-2-ethyl hexyl sebacate, a typical di-ester oil. To test for possible swelling by the gelling agent, rubber specimens were immersed in granular lithium stearate. Volume change for all stocks was less than 0.5 percent after 70 hours at 100°C. For all practical purposes, immersion in a suitable di-ester oil therefore suffices to evaluate resistance of rubber compounds to di-ester greases.

The effects of continued immersion in di-2-ethyl hexyl sebacate on volume change is demonstrated by Figure 1. It should be noted that the MIL-R-6855 Class II neoprene stock continued to swell and did not reach equilibrium, whereas the MIL-R-6855 Class I Hycar OR-25 stock swelled much less and did not change appreciably on continued immersion. The lower acrylonitrile content MIL-P-5516 stock, although swelled more than the latter, increased only slightly in swelling on continued immersion.

Figure 2 demonstrates the effect of di-2-ethyl hexyl sebacate on hardness. Here, as in Figure 1, the MIL-R-6855 Class II neoprene stock became progressively softer on continued immersion. Both nitrile rubbers decreased in hardness during the first five days but did not change appreciably on continued immersion.

The effect on tensile strength after immersion for 70 hours at 100°C. in di-2-ethyl hexyl sebacate is demonstrated by Figure 3. Tensile values for MIL-R-6855 Class II neoprene will of course decrease on continued immersion, as indicated by the volume and hardness data of Figures 1 and 2. Both nitrile rubber stocks can be expected to remain substantially as indicated in Figure 3 on continued immersion.

Conclusions

Di-ester greases of the MIL-G-3278 type swell and deteriorate oil-resistant rubber materials to a greater extent than comparable petroleum-base lubricants. Neoprene W compounds, which are widely used with petroleum greases and oils, are unsuitable for use with di-ester lubricants due to excessive swelling and deterioration. Moreover, physical properties become progressively poorer on continued immersion. It is to be expected that Neoprenes WRT, GN, GRT, RT, E, and S will behave in a similar manner. However, recent test work conducted with Neoprene Q, a special-purpose neoprene, indicates that it can be used to compound di-ester resistant stocks. Neoprene Q is a copolymer product of chloroprene and acrylonitrile and behaves similar to the medium acrylonitrile Buna N polymers in these lubricants.

Swelling and deterioration of nitrile rubbers on immersion in di-esters is governed by the acrylonitrile content of the base polymer. As acrylonitrile content is increased, resistance to di-esters increases. In contrast to Neoprene W, the nitrile rubbers do not show progressive deterioration in physical properties on continued immersion. Compounds made with high acrylonitrile content polymers, such as Hycar OR-15, provide the best resistance to di-esters. Medium acrylonitrile content polymers, such as Hycar OR-25 and Paracril 26, provide a more favorable balance between di-ester resistance at 100°C. and low temperature flexibility. Low acrylonitrile content polymers, such as Paracril 18, although swelled and deteriorated to a greater extent, may be suitable in certain applications where higher swelling can be tolerated to obtain low temperature flexibility.

Composition of the particular di-ester grease greatly affects rubber swelling. Those lubricants containing a blend of di-ester and hydrocarbon oils swell rubber less than greases made with 100 percent di-ester. Differences in rubber swelling due to variations in the amount and type of di-ester contained in the grease have been noted. Procurement specifications for di-ester lubricants should contain rubber swelling index requirements in order that design tolerances for rubber items can be standardized within realistic limits.

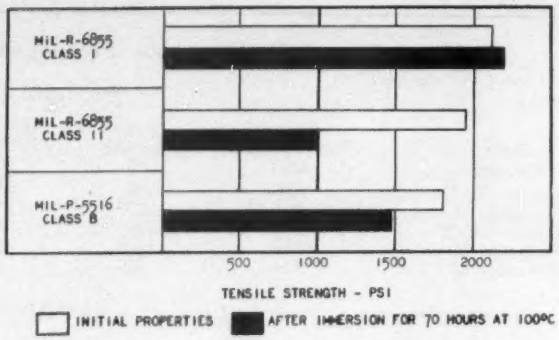

FIG. 3—Effect of di-2-ethyl hexyl sebacate on tensile strength.

ACKNOWLEDGEMENTS

The author is indebted to various personnel of the Aeronautical Materials Laboratory who made this work possible, particularly to W. Brown and J. Bard who conducted most of the test work and to C. E. Granger and J. H. Bowen, Jr., for their interest and encouragement. In addition, the cooperation of R. Lamson and M. Devine in furnishing lubricant samples and information concerning them, without which this work would not have been possible, is greatly appreciated.

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(1) Harper, R. M., "The Effect of Di-Ester Oil on Specification 33R14 Rubber Materials," Naval Air Experimental Station, Report No. AML NAM AE424737, Part I, issued April 26, 1951

(2) Wiley, R. H., and Brauer, G. M., *Journal of Polymer Science*, Vol. 3, No. 5, pp. 704-07 (Oct., 1948).

Combining high quality with low cost, the new **Clark Heavy-Duty Model CB Floor Truck,** produced by the All Steel Welded Truck Co., Rockford, Ill., is made with two complete arc-welded steel frames without any bolts or loose joints, and has rounded corners for safety. The flush-mounted renewable deck is sandwiched between the frames and protected by a minimum of six and as many as eight cross-members per truck.

A standard line of high and low-temperature environmental test equipment designed to provide test conditions for the majority of all testing requirements has been announced by Tenney Engineering, Inc., 26 Avenue B, Newark 5, N. J. Comprising two separate units, the Tenney **Servo Unit** and the Tenney **Companion Test Chamber,** the equipment furnishes controlled temperatures for conducting physical tests, weathering and aging tests.

Cutting Costs at Hood Rubber with Beta Gauge Control

By JOHN GARROD

Physicist, Hood Rubber Co., a Division of the B. F. Goodrich Co., Watertown, Mass.

A UNIQUE electronic instrument—the beta gauge—a product of America's vast atomic energy program, is helping the Hood Rubber Company, a division of B. F. Goodrich, cut costs and make substantial raw material savings. This new instrument does several things that were not possible prior to its development and manufacture by Tracerlab, Inc., of Boston, Mass., the firm that conceived and produced the first commercial beta gauges.

The beta gauge continuously measures the weight per unit area of sheet products without contacting the material being gauged. And it does this while the material is in a soft state and not susceptible to being gauged by any other non-destructive means. In addition, if the density of the product remains constant, as it does at Hood, the weight figures can be readily translated into thickness. Thus, the gauge is, in effect, a practical, extremely sensitive thickness gauging unit.

In Figure 1, twin Tracerlab "backscatter" units are seen gauging soft rubber as it passes over a huge calender roll, immediately before the rubber is applied to a cloth backing. By maintaining a constant rubber thickness a more uniform finished product is assured. Since the installation of the gauges, Hood has been able to run closer to minimum tolerance and thus obtain substantial raw material savings.

This calender produces coated fabric which is used as inside parts for waterproof footwear, and also coated fabrics sold in rolls to other manufacturers. The savings in raw material with even a slight decrease in operating thickness are considerable. In the case of the footwear material the calender operator is expected to run as close to the specifications as possible. If, because of use of the beta ray gauge, he is able to make a saving of an average of even one mil of coating material the dollar saving may be surprisingly large when one figures the calender operating two shifts, five days a week, at a speed of more than twenty yards a minute.

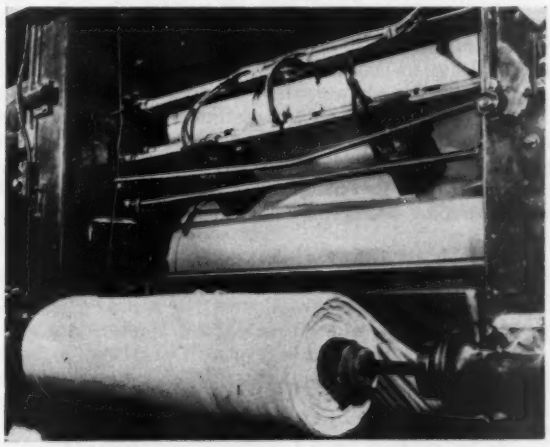


FIG. 1—One use of beta ray gauges at the Hood Rubber plant is seen in this photograph. Two Tracerlab BG-1 backscatter gauges are mounted so that the thickness of each edge of the rubber passing through the calender is measured.

FIG. 2—The two beta gauge consoles and the two Brown circular recorders are conveniently mounted in a special rack designed by engineers of the Hood Rubber Process Department.

In the case of yard goods, an average weight tolerance of 5% plus or minus on the finished product, ready for shipment, has been established. Two ranges of coating thickness are typical, 7 to 10 mils and 19 to 20 mils. In practice most of the variation in the finished product has been found to be due to variation in coating thickness. Because the beta gauge has enabled the calender operator to control coating thickness more closely, the number of off-weight rolls has decreased by 75%. Since off-weight rolls average about 70% heavy and 30% light, there has been an appreciable saving of material and an improved quality.

The two backscatter heads are located near each end of the calender roll and the results of the continuous measurement of the rubber thickness are shown on two large Brown circular recorders placed directly above the Tracerlab gauge consoles (Figure 2). One recorder gives readings from the bull gear side of the roll and the other from the mill side. As can be seen from the large indicator pointers in the photograph, both gauges are reading exactly the same.

The recorders are located on the opposite side of the mill from where the backscatter heads are placed. This location enables the operators who feed in the raw mate-

rial to watch results and quickly make adjustments to the calender when changes in thickness are shown.

The charts are removed each day by a member of Hood's Process Control Department, the only person allowed to make adjustments on the gauge or recorders. The console doors are locked to prevent changes being made in gauge settings. The charts provide a permanent record of the material produced. Recorders can be mounted where desired, up to about 150 feet from the gauging head. Hood has mounted their recorders about 50 feet from the backscatter heads.

The principles upon which the gauge operates—both nuclear and electronic—are simple. Enclosed within the cylindrical ionization chamber, which is suspended just above the product being gauged, is a small, shielded, source of radioactivity obtained from the Atomic Energy Commission at Oak Ridge, Tennessee. This source—in this case radioactive Strontium-90—gives off beta particles, which are actually electrons with high kinetic energy. Because the source is triply-sealed, no activity can escape to contaminate the product, and the source is shielded on the top so that radiation is directed away from the detector.

The beta particles penetrate the soft rubber, strike the steel calender roll, and are "backscattered" through the rubber back into the ionization chamber. The process is analagous to shining a flashlight into a mirror. The principle of the process is shown in Figure 3.

Ability of a material to backscatter beta particles is related to the electron density within the material, i.e., the material's atomic number. If a coating or layer of material is placed over the first material, the current flowing from the ionization chamber decreases if material with a lower atomic number is used and increases for material of a higher atomic number. The backing material must be sufficiently thick so that variations in its thickness do not influence the gauge readings.

Operation of the Beta Gauge

In practice, the reflecting material is either a roll on the machine using the gauge, such as the Hood installation, or a plate over which the material travels. The reflecting material can be iron, steel, stainless steel, or chrome-plated steel, as long as it has infinite thickness. The material to be measured can be any material with an average atomic number below 15 to 20.

As the "backscattered" beta particles enter the air within the ionization chamber they "collide" with the atoms of air and yield some of their energy of motion to the atoms in such a way as to divide some of the normally uncharged atoms into two equally oppositely charged sections called ions. The ions, being charged, are attracted to and collected in an electrode with an opposite charge, and the migration of ions across the gas constitutes an electrical current between the electrodes.

Since the number of beta particles is small, the effect is small, and the ionization current developed by the source of the Tracerlab BG-1 Beta Gauge is of the order of 10^{-9} amps. This small electrical current is measured simply, accurately and reliably by a one-stage bridge-type D.C. amplifier.

Variations in sheet thickness increase or decrease the number of electrons absorbed in the material before entering the detecting head. Every change brings about a corresponding change in the electrical current flowing to the meter and sheet deviations are thus easily measured.

The beta gauge has a number of advantages over other

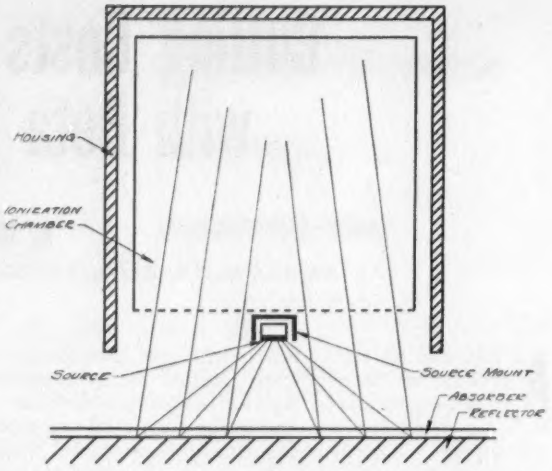


FIG. 3—Schematic drawing showing the principle of operation of the Tracerlab backscatter beta gauges.

gauging methods. Because the measuring is performed by means of nuclear energy, no physical contact is made with the material being gauged. Therefore, no marking of delicate, soft or easily marred surfaces can result. Where soft materials such as paper and rubber are to be gauged, the former practice was to tear out a section of the sheet, cut a piece of known size, and weigh the material. Although this method was practical within the limits of accuracy of the scale, it had the major drawback of destroying part of the product. Also, it was only possible to sample the product at various intervals.

Another basic advantage of the beta gauge is the fast knowledge it gives of material changes. A trend or tendency of the product being gauged to vary, is quickly detected and recorded, thus permitting fast control. Too, the gauge enables operators to get "on gauge" quickly when starting a run,. and substantially reduces the amount of sub-standard material processed before a product of correct tolerance is reached. Where a gauge is installed on each side of the sheet, an immediate indication is given of a "cocked" roll, resulting in non-uniform thickness across the sheet. The operators can thus prevent any considerable amount of unacceptable material due to this difficulty.

Although the gauges shown represent the latest Hood Rubber Company installation, this firm has a number of beta gauges in use and is a pioneer industrial user of Tracerlab gauges. Another new Tracerlab gauge of the absorption type is now in process of being installed.

Bakelite Polyethylene. Bakelite Co., 300 Madison Ave., New York 17, N. Y. 8½ x 11 in. 24 pp.

New information about the properties, applications and methods of fabricating Bakelite polyethylene plastic is set forth in this booklet. It emphasizes with photographs and data the greatly increased use of polyethylene for producing squeezable bottles and of their fabrication by blow-molding. Also, the use of Bakelite polyethylene pipe for water service, wiring conduit, and mine and chemical piping is mentioned. Tables show the relatively high permeability of polyethylene film to oxygen and carbon dioxide, while other tables tabulate the average properties of molding and electrical compounds.

Accelerator Compounding: Heat History and Compounding

By B. S. GARVEY, Jr., D. W. YOCHUM, and C. A. MORSCHAUSER
Sharples Chemicals Inc., Wayne, Penna.

This paper discusses certain phases of compounding which are related to scorch time and cure time. Vulcanization time is defined as the difference between cure time and scorch time.

Evidence is presented to support the following thesis: Both maximum scorch time and vulcanization time are characteristics of a compound and are dependent primarily on the accelerator but also to some extent on the sulfur ratio, pigments, etc.

The maximum scorch time may be partly or completely used up by the heat history of processing (measured here by time on a hot mill) so that for different batches the residual scorch time is variable and depends on heat history. The vulcanization time, on the other hand, is constant and is independent of the scorch time of the particular batch.

Since cure time is the sum of the constant vulcanization time and the variable scorch time, it also varies with the heat history of the batch. This may explain many apparently mysterious variations in numerous factory cures.

Different accelerators vary in maximum scorch time, in vulcanization time, and in the ratio of the two.

If processing heat history can be adequately controlled it is possible to process stocks at curing temperatures or even at higher ones.

IN this paper we will discuss certain phases of accelerator compounding which are related to scorch time and cure time. First, we will illustrate certain concepts. Second, we will show why we think they are true. Third, we will point out some consequences of them. Along the way we will also include a couple of slightly extraneous observations because they are interesting and because they have some practical value.

Among the most important characteristics of accelerators are the scorch time, the cure time and the vulcanization time. These are illustrated in Figure 1. Both scorch time and cure time are used in their usual, widely accepted sense. The scorch time is the time available at a given temperature before the stock begins to vulcanize. Maximum scorch time is the scorch time at zero heat history while residual scorch time is the scorch time remaining in a specific batch at a specific time. The cure time is the time a stock must be heated in a press; for example, at a given temperature until it reaches a technically correct cure. The "vulcanization time" is the term we have chosen to designate the time required after vulcanization has started until a satisfactory technical cure is reached. As indicated in Figure 1, it is numerically equal to the cure time minus the scorch time.

For a given compound, we believe, both the maximum scorch time (at zero heat history) and the vulcanization time are characteristic constants. They depend primarily on the accelerator but are affected also by the sulfur ratio, pigments, softeners, and some other materials.

The maximum scorch time, however, is used up during factory processing before the product is cured. The amount of scorch time used up is equivalent to the heat history of the particular batch of compound being used. Thus, the residual scorch times for different batches of the same compound may vary widely depending on their heat history. Although the maximum scorch time may have been 30 minutes the residual scorch time of a particular batch may be only 20 minutes or 10 minutes.

The vulcanization time, on the other hand, remains essentially constant regardless of the heat history of the particular batch. No matter how much of the maximum scorch time is used up, the vulcanization time remains the same. It is obvious that if the vulcanization time remains constant and the scorch time varies with heat history, then the cure time also must vary with heat history.

Experimentally we will show why we believe that the vulcanization time remains constant while both cure time and residual scorch time vary with the heat history of the batch. The experiments fall into two groups. In the first group we have studied a large number of batches of the same two compounds and have developed the pattern. In the second we have studied a few batches each of nine compounds with five different accelerators to see if they fit the same pattern.

"Heat history" is a term used by rubber men to indicate the cumulative time-temperature effect to which a rubber stock has been submitted. It is an integration of the time and temperature to which the stock has been exposed. It depends on the temperature of mixing,

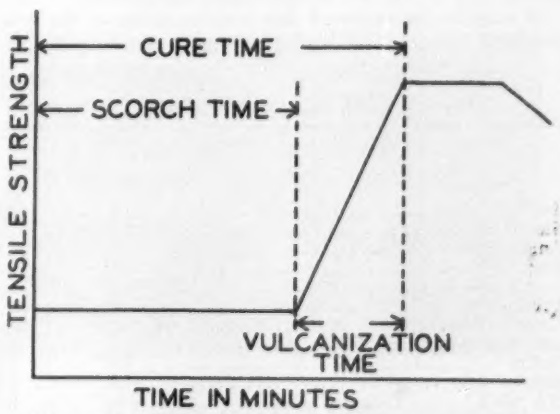


FIG. 1—Visualization of scorch time, cure time and vulcanization time.

Note: This article is based on a series of papers delivered by Dr. Garvey before various local rubber groups in the past two years.

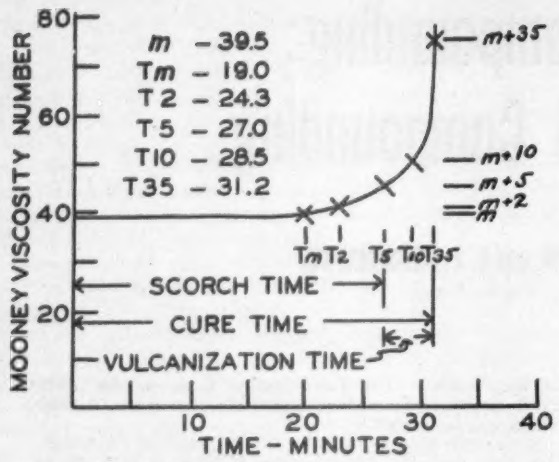


FIG. 2—Typical Mooney cure curve.

warm-up, calendering, and tubing. These temperatures in turn depend on the rate of processing, the temperatures of the cooling water, the cooling efficiency of the equipment, and the stock temperature best suited for a particular operation. It also depends on the efficiency of cooling of the stock between sheeting off and piling on skids. Air temperatures will influence both the rate and extent of cooling. The time element will be affected by rates of mixing, calendering, tubing, the length of time between operations, and by any repetition of a process such as tubing.

Theoretically, heat history can be calculated as equivalent to a definite time at a definite temperature. In practice, of course, such calculations are difficult, if not impossible, to make with precision. However, rough estimates of probable heat history are regularly made by compounders. For example, to say that a stock must have a scorch time of 20 minutes at 250°F. is to say that the heat history accumulated during processing may be equivalent to 20 minutes at 250°F.

Because of its importance to processing difficulties and to scrap stock, the effect of heat history is usually considered in relation to scorch time. Its effect on cure time is generally overlooked. In this study we have used the time of milling on a hot mill as a measure of the heat history of the batch. The stock temperature was measured with a needle pyrometer and kept within ±3°F. of the temperatures designated.

It must be remembered that measurements of the type involved here are not high precision measurements and

TABLE I—BASE COMPOUNDS

Compound	A	B
Smoked Sheet	100.0	100.0
Stearic Acid	1.0	1.0
Antioxidant	1.0	1.0
Zinc Oxide	10.0	10.0
Soft Clay	50.0	50.0
Precipitated Whiting	75.0	75.0
Ground Whiting	60.0	60.0
Sun Checking Wax	3.0	3.0
Sulfur	1.0	1.0
Ethylac	1.5	1.5
SA 62-O	—	0.2
	302.5	302.7

TABLE II—SCORCH DATA FOR COMPOUND A AT 244°F.

Mooney Scorch	Mill Scorch	Press Scorch
26.9	56*	24*
28.6	72	26*
27.0	62	24*

* Calculated from 262° F.

that the precision is further limited by the complications of mixing, curing, and remilling the compounds. The selection of scorch time and cure time of a batch on the mill or from press-cured sheets is, to some extent, a matter of personal judgment. We have taken considerable pains, both in the conduct of the experimental work and in the analysis of the data, to overcome these handicaps as much as possible. We feel that the results are essentially accurate if not very precise.

Measurements of Scorch Time

The scorch times were measured in three different ways: (1) on the Mooney machine, (2) on a hot mill, and (3) by press cures.

Figure 2 shows a typical Mooney cure curve and how we construct it from laboratory data. The cure curve drawn by the recorder is generally too long for convenient use. Therefore, we take from this curve the six figures shown, as follows:

M—is the minimum viscosity reading.
Tm—is the time in minutes for the last minimum viscosity reading.
T2—is the time in minutes for the viscosity to rise 2 points.
T5—is the time in minutes for the viscosity to rise 5 points.
T10—is the time in minutes for the viscosity to rise 10 points.
T35—is the time in minutes for the viscosity to rise 35 points.

From these figures, it is easy to reconstruct the cure curve on a suitable scale as is done in Figure 2. T5 is taken as the scorch time and is the time in minutes from the instant the dies are closed until the viscosity has risen 5 points (ASTM D1077-49T). The Mooney cure time is taken as T35, the time for the viscosity to rise 35 points. The difference between the cure time and the scorch time is what we call the vulcanization

TABLE III—SCORCH DATA FOR COMPOUND A AFTER REMILL

Min. Remill at 244° F.	Mooney Scorch at 244° F.	Total Scorch Equivalent at 244° F.
0	28.6	28.6
52	21.9	73.9
62	13.3	75.3
68	6.7	74.7
72 S	—	72.0
Min. Remill at 262° F.		
0	26.9	26.9
18	16.7	52.7
23	7.1	53.1
26	9.7	61.7
28 S	—	56.0

TABLE IV—SCORCH DATA FOR COMPOUND B AT 244°F.

Mooney Scorch	Mill Scorch	Press Scorch
12.2	17.0	12.0 *
15.0	18.0 *	14.0 *
13.0	20.0	10.0 *
13.9	20.0 *	10.0 *

* Calculated from 262° F.

time. With slight modification, this is the method of Shearer, Juve, and Musch [*India Rubber World*, Vol. 117, p. 216 (Nov., 1947)].

The mill scorch time is the time on a hot mill at which the stock shows definite signs of scorch. The smoothly milling stocks begin to get grainy, rough, or dry. The press scorch time was taken from a series of cures run at one minute intervals. The time selected was that of the last cure before there was a definite rise in modulus and tensile strength.

The two compounds used are shown in Table I. They are typical 30% Hevea, wire insulation stocks. Compound A is accelerated with Ethylac and Compound B with a mixture of Ethylac and SA 62 (tetraethyl thiuram disulfide).

Table II shows the scorch times found by the three different methods for Compound A. The first column shows the Mooney scorch times determined at 244°F. for three different batches. In the second column the first batch had a mill scorch time of 28 minutes at 262°F. which is equivalent to 56 minutes at 244°F. The other two mill scorch times were determined at 244°F. The press scorch times were all determined at 262°F. and doubled to give the equivalent scorch times at 244°F. The Mooney scorch time and the press scorch time are quite close together but the mill scorch time is much longer.

Table III shows how the scorch time varies for Compound A after different periods of hot milling. The first column shows the actual time of remill at 244°F. The stock was scorched in 72 minutes. The top figure is the maximum scorch time and the other figures are the values found after the periods of hot milling. The last column, the total scorch equivalent, is the sum of the first two columns. In each case, hot milling has appreciably lengthened the time of the total scorch equivalent. This means that the stock took longer to scorch on the hot mill than it did in the Mooney machine.

The lower set of figures shows the same thing. Here the remill temperature was 262°F. and the times were doubled to get the total scorch equivalents. This assumes a temperature coefficient of 2 for each 18°F.

Table IV shows the three types of scorch data for Compound B. Here again the press scorch time and the Mooney scorch time are close together, with the press scorch time a little shorter. The mill scorch time is somewhat longer but the difference is not as great as for Compound A.

Table V shows the effect of hot milling on scorch time for Compound B and is comparable to Table III. The upper values were all determined at 244°F. and the total scorch equivalents are the sum of the other two values. For the lower set of figures the remilling was at 262°F. and the total scorch equivalent values are the sum of twice this value and the value for scorch at 244°F. The total scorch equivalent is somewhat longer where the stock has been remilled.

With Compound A the press scorch time, where the stock was at rest, was much shorter than the mill scorch

TABLE V—SCORCH DATA FOR COMPOUND B AFTER REMILL

Min. Remill at 244° F.	Mooney Scorch at 244° F.	Total Scorch Equivalent at 244° F.
None	12.2	12.2
9	8.4	17.4
15	3.3	18.3
17 S	——	17.0
Min. Remill at 262° F.		
None	15.0	15.0
6	6.2	18.2
9	2.7	20.7
10 S	——	20.0

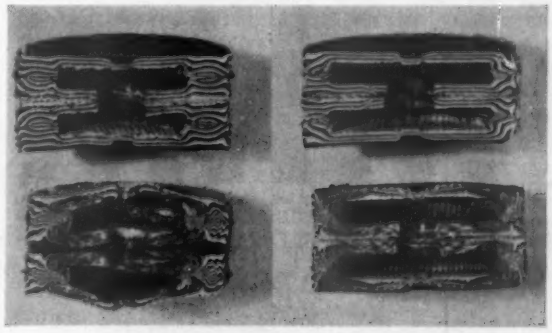
time, where the stock was being worked. Apparently, the working delayed the onset of scorching. Since the Mooney scorch time was quite close to the press scorch time, the question arose as to just how much working the stock gets in the Mooney machine. The answer is indicated in Figure 3 where we used alternating plies of black and white stock to build up the specimens. The black stock was the white one to which 3 PHR of soft black had been added.

Figure 3a is with the small rotor. The top specimen was cured without turning the rotor. The bottom specimen was run by the usual procedure but left in the machine at the end to get a tighter cure. It will be noticed that the middle layers between the rotor and the die have been worked but that on the sides and next to the rotor and dies, the stock has not been worked. Figure 3b shows corresponding specimens with the large rotor. The pattern is a little different because of the knurling on the edge of the rotor, but again only part of the stock has been worked.

Scorch Time, Cure Time, and Vulcanization Time

We have seen that the scorch time is shortened as a result of hot milling. The next question is: "How does hot milling affect cure time and vulcanization time?"

Table VI shows how press cure time is affected by hot milling. In determining cure times, cures were made at one minute intervals. The first cure to show a modulus at 200% of 400 psi and a tensile strength of 1700 psi was taken as a good technical cure. The cure time is markedly affected by heat history, as measured by time on a hot mill. Table VII shows corresponding data



A B

FIG. 3—Specimens made with small (left) and large (right) rotors.

TABLE VI—PRESS CURE TIME AFTER REMILL —COMPOUND A

Min. Remill at 244° F.	Press Cure Time (min. at 262° F.)
None	17
30	14
40	12
50	11
Min. Remill at 262° F.	
None	18
18	14
23	12
26	10

TABLE VII—PRESS CURE AFTER REMILL —COMPOUND B

Min. Remill at 244° F.	Press Cure Time (min. at 262° F.)
None	10
9	9
15	7
17	6
Min. Remill at 262° F.	
None	9
3	8
5	7
8	5

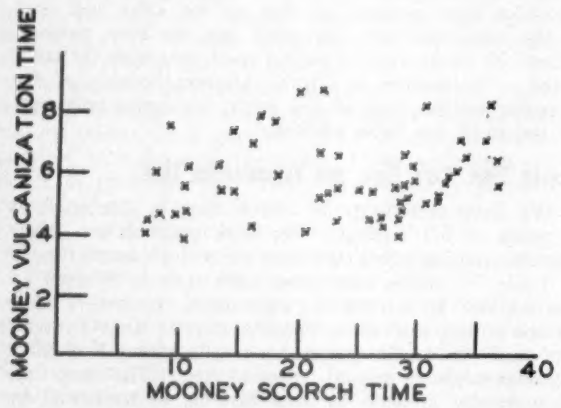


FIG. 4—Mooney scorch time versus Mooney vulcanization time for 52 batches of Compound A.

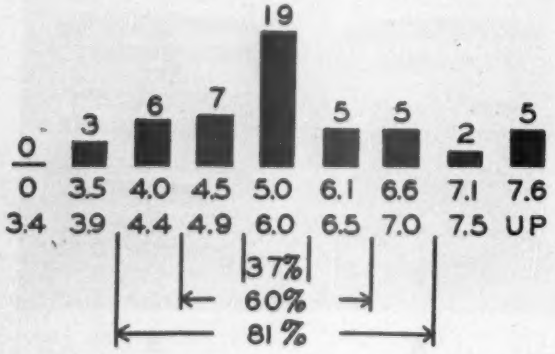


FIG. 5—Distribution of Mooney vulcanization times (at 244°F.) for 52 batches of Compound A.

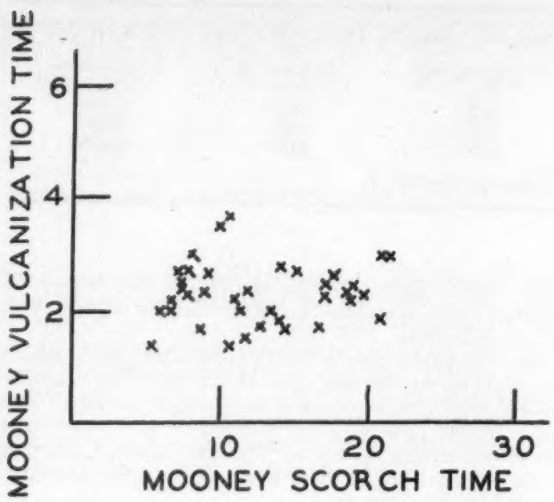


FIG. 6—Mooney scorch time versus Mooney vulcanization time for 37 batches of Compound B.

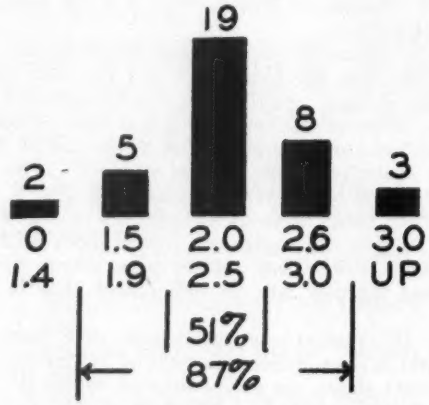


FIG. 7—Distribution of Mooney vulcanization times (at 244°F.) for 37 batches of Compound B.

for Compound B. Again heat history has a pronounced effect on cure time. These results are typical of many which we have obtained.

In the comparison of vulcanization time to scorch and cure times, we can use Mooney data, press cure data, or combinations of the two. We repeat that what we call the vulcanization time is the difference between the cure time and the scorch time.

Figure 4 shows a scattergram in which Mooney scorch time has been plotted against Mooney vulcanization time for Compound A. The data cover 52 batches mixed over a period of 18 months using three lots of rubber. The variations in scorch time are the results of different mixings and of different times and temperatures of hot remilling. There is no regular change in vulcanization time as the scorch time changes. On the other hand, it is quite noticeable that all of the vulcanization times fall within a rather narrow band. In Figure 5 is shown the distribution of the Mooney vulcanization times for these same batches. Although the scorch times varied from 6.5 minutes to 36.5 minutes, 81% of the vulcanization times were within the range of 5.5 ± 1.5 minutes.

Figure 6 shows the scattergram for Mooney vulcanization time versus Mooney scorch time for 37 batches of Compound B. Again there is no regular variation of vulcanization time with scorch time and again the vulcanization times all fall within a narrow band. Figure 7 shows the distribution of the vulcanization times for Compound B. Although the scorch times varied between 21.2 and 5.8 minutes 87% of the vulcanization times fall in the range of 2.25 ± 0.75 minutes.

Figure 8 shows the distribution of press vulcanization times at 262°F. for 26 batches of Compound A. These values were obtained by subtracting the press cure time from the press scorch time. Here 81% of the values fall in the range of 6 ± 1 minute. Figure 9 shows the corresponding data for 18 batches of Compound B. Here 94% of the values fall in the range of 4 ± 1 minute.

The vulcanization times at 262°F. were also calculated by using the press cure time at 262°F. and subtracting the Mooney scorch time measured at 262°F. or calculated to 262°F. from the data obtained at 244°F. Figure 10 shows the results for 31 batches of Compound A, calculated in this manner. Here 71% of the results fall in the range of 5.5 ± 1.5 minutes. Figure 11 shows similar data for 22 mixes of Compound B. Here 73% of the results are in the range of 3 ± 1 minute. These results indicate that for each compound the vulcanization time is constant within narrow limits regardless of the scorch time.

It is very difficult to obtain high precision in this type of work. In spite of all our efforts there are some individual results which are out of line and the quantitative agreement between batches mixed at different times on the same recipe leaves something to be desired. However, every series of experiments showed the same relation between scorch time, cure time, and hot mill time. The statistical comparisons cover 89 batches mixed at different times over a period of some 18 months, with different pigments, and with three different lots of blended rubber.

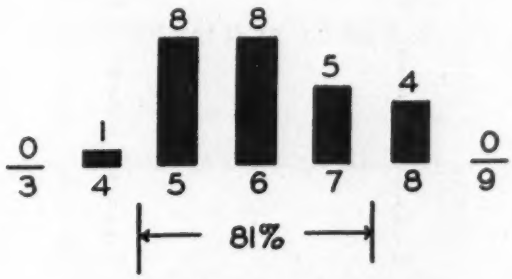


FIG. 8—Distribution of press vulcanization times (at 262°F.) for 26 batches of Compound A.

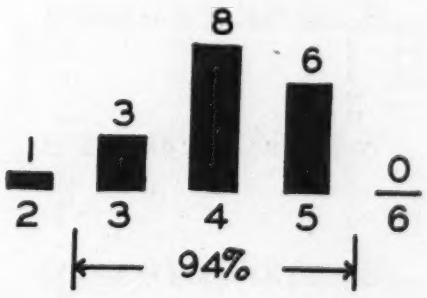


FIG. 9—Distribution of press vulcanization times (at 262°F.) for 18 batches of Compound B.

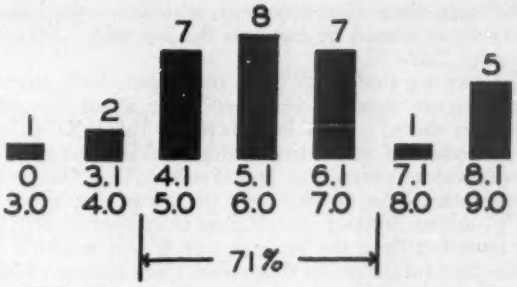


FIG. 10—Distribution of calculated vulcanization times for 31 batches of Compound A.

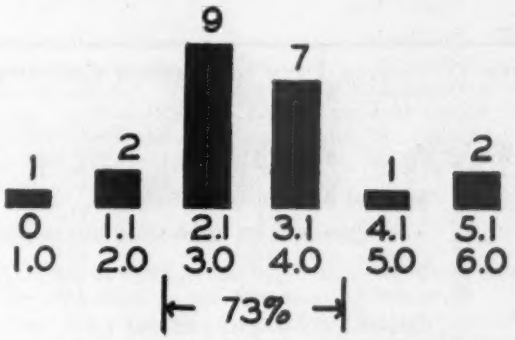


FIG. 11—Distribution of calculated vulcanization times for 22 batches of Compound B.

The second phase of our work covered experiments to see if similar results would be obtained with a wider range of acceleration. Here we used five different accelerators in nine different compounds with the base recipe shown in Table VIII. A large batch of each compound was mixed and portions of it were remilled for various periods of time at 262°F.

Table IX shows how Mooney scorch time is affected by time on a hot mill. For the three compounds with varying ratios of Ethylac and sulfur the scorch time decreases with hot remill time. In this case, as shown by the Total Scorch Equivalent, the hot mill time, or mill scorch time, is considerably longer than the corresponding Mooney scorch time. With the two compounds containing SA 52 (tetramethyl thiuram disulfide), mill scorch time is equal to Mooney scorch time. The same is true with SA 62, with MBT and with MBTS. In every case the scorch time decreased with increasing time of remill.

TABLE VIII—MASTERBATCH RECIPE

Smoked Sheet Blend	100
MT Black	40
Zinc Oxide	5
Stearic Acid	2
PBNA	1
	148

The cure time also decreased with increasing heat history as measured by time on the hot mill. This is shown by Table X.

Thus we see that in all these compounds both scorch time and cure time are variable. How about the vulcanization times? This is shown by Table XI using two methods of estimating vulcanization time. The Mooney vulcanization time is T35 minus T5. The press vulcanization time at 280°F. is the press cure time at 280°F. minus Mooney scorch time calculated to 280°F. (e.g., one-fourth of the Mooney scorch time at 244°F.). In all cases vulcanization times were quite constant within each group.

This limited study of the nine compounds indicates that all of them fall into the pattern shown by the extensive study of the first two compounds.

Table XII is a comparison of the maximum scorch times and the vulcanization times for these compounds. With only these five accelerators it is apparent that there can be considerable differences in the ratios of vulcanization time to maximum scorch time. The two C compounds have a shorter vulcanization time and also a shorter scorch time than the two D compounds. Compound B-1 has the same vulcanization time as Compound F-1 but a much longer scorch time. Compound D-1 has about the same scorch time as Compound G-1 but a much shorter vulcanization time. The ratio of maximum scorch time to vulcanization time ranges from

TABLE IX—SCORCH DATA FOR VARIOUS COMPOUNDS AFTER REMILL

Min. Remill at 262° F.	Mooney Scorch at 244° F.	Total Scorch Equivalent at 244° F.
Compound B-1—Ethylac 1.5-Sulfur 1.0		
0	27.0	27.0
12	23.2	47.2
17	18.5	52.5
19	9.9	47.9
22	scorch	44.0
Compound B-2—Ethylac 1.0-Sulfur 1.5		
0	29.5	29.5
13	16.9	42.9
18	10.7	46.7
20	7.8	47.8
23	scorch	46.0
Compound B-3—Ethylac 0.5-Sulfur 2.5		
0	26.8	26.8
6	18.6	30.6
11	15.3	37.3
13	13.0	39.0
16	scorch	32.0
Compound C-1—SA 52 1.0-Sulfur 1.0		
0	13.0	13.0
2	9.9	13.9
4	8.2	16.2
5	5.7	15.7
7	scorch	14.0
Compound C-2—SA 52 0.4-Sulfur 2.5		
0	13.6	13.6
3	9.8	15.8
5	7.0	17.0
7	4.6	18.6
8	scorch	16.0
Compound D-1—SA 62 1.0-Sulfur 1.0		
0	20.2	20.2
3	16.0	22.0
5	11.3	21.3
7	6.3	20.3
10	scorch	20.0
Compound D-2—SA 62 0.4-Sulfur 2.5		
0	22.6	22.6
3	15.0	21.0
8	9.0	25.0
10	6.4	26.4
12	scorch	24.0
Compound F-1—MBT 0.75-Sulfur 2.50		
0	10.4	10.4
2	10.0	14.0
3	6.6	12.6
4	6.7	14.7
5	scorch	10.0
Compound G-1—MBTS 1.0-Sulfur 3.0		
0	19.5	19.5
4	12.8	20.8
6	12.0	24.0
8	9.7	25.7
11	scorch	22.0

TABLE X—CURE TIME FOR VARIOUS COMPOUNDS AFTER REMILL

Min. Remill at 262° F.	Press Cure Time (min. at 280° F.)
Compound B-1—Ethylac 1.5-Sulfur 1.0	
0	14
12	13
17	12
19	10
22	—
Compound B-2—Ethylac 1.0-Sulfur 1.5	
0	13
13	11
18	9
20	8
23	—
Compound B-3—Ethylac 0.5-Sulfur 2.5	
0	11
6	10
11	9
13	9
16	—
Compound C-1—SA 52 1.0-Sulfur 1.0	
0	6
2	6
4	5
5	5
7	—
Compound C-2—SA 52 0.4-Sulfur 2.5	
0	7
3	6
5	4
7	3
10	—
Compound D-1—SA 62 1.0-Sulfur 1.0	
0	9
3	9
5	8
7	6
10	—
Compound D-2—SA 62 0.4-Sulfur 2.5	
0	9
3	9
8	6
10	5
13	—
Compound F-1—MBT 0.75-Sulfur 2.5	
0	10
2	10
3	10
4	8
5	—
Compound G-1—MBTS 1.0-Sulfur 3.0	
0	16
4	14
6	12
8	12
11	—

1.4 in Compound F-1, through 2.0 for Compound G-1 and 4.3 for Compound C-1 to 5.4 for Compound B-3.

Now let us look again at our idealized curve (Figure 1). With each of these natural rubber compounds the vulcanization time has been found to be constant. With different compounds, especially with different accelerators, the vulcanization times may be different and so may the maximum scorch times. Further, the differences in scorch time may be independent of those in vulcanization time. It is, therefore, possible to get many different combinations of maximum scorch time and vulcanization time.

The scorch time shown on the curve represents the maximum available. Part or all of it may be used up by the heat history built up during processing. Thus, after processing the residual scorch time will be considerably shorter. The vulcanization time, however, will remain constant. Now, since the residual scorch time will vary with the heat history and the vulcanization time will remain constant, it follows that the cure time also must vary with the heat history.

TABLE XI—VULCANIZATION TIME FOR VARIOUS COMPOUNDS

Min. Remill at 262° F.	Mooney at 244° F.	Press at 280° F.
Compound B-1—Ethylac 1.0-Sulfur 1.5		
0	7.2	7.25
12	9.0	7.25
17	6.5	7.50
19	6.7	7.50
22	——	——
Compound B-2—Ethylac 1.5-Sulfur 1.0		
0	6.4	6.50
13	6.7	6.75
18	6.9	6.25
20	5.4	6.00
23	——	——
Compound B-3—Ethylac 0.5-Sulfur 2.5		
0	5.4	4.25
6	7.1	5.25
11	7.5	5.00
13	5.5	5.25
16	——	——
Compound C-1—SA 52 1.0-Sulfur 1.0		
0	4.4	2.25
2	4.5	3.50
4	4.5	3.00
5	4.6	3.50
7	——	——
Compound C-2—SA 52 0.4-Sulfur 2.5		
0	4.6	3.60
3	3.4	3.50
5	4.1	2.25
7	3.4	2.00
10	——	——
Compound D-1—SA 62 1.0-Sulfur 1.0		
0	6.6	4.00
3	7.0	5.00
5	7.0	5.00
7	5.8	4.50
10	——	——
Compound D-2—SA 62 0.4-Sulfur 2.5		
0	4.9	4.50
3	4.1	5.25
8	4.1	3.75
10	3.8	3.50
13	——	——
Compound F-1—MBT 0.75-Sulfur 2.5		
0	2.1	7.40
2	4.0	7.50
3	2.9	8.40
4	2.8	6.40
5	——	——
Compound G-1—MBTS 1.0-Sulfur 3.0		
0	6.4	11.00
4	5.7	10.25
6	7.0	9.00
8	5.3	9.25
11	——	——

TABLE XII—COMPARISON OF MAXIMUM SCORCH TIMES AND VULCANIZATION TIMES FOR VARIOUS COMPOUNDS

Accel.	Comp.	Scorch Time at 244° F. Mooney	Scorch Time at 244° F. Mill	Vulc. Time Press at 280° F.
Ethylac	B-1	27.0	44.0	7.4
	B-2	29.5	46.0	6.4
	B-3	26.8	32.0	5.0
SA 52	C-1	13.0	14.0	3.0
	C-2	13.6	16.0	2.8
SA 62	D-1	20.2	20.0	4.6
	D-2	22.6	24.0	4.4
MBT	F-1	10.4	10.0	7.4
MBTS	G-1	19.5	22.0	9.9

Significance to Compounding and Processing

Now let us consider the significance of these results to the compounding and processing of rubber.

There are a number of variables in factory processing which can result in considerably different heat histories for different batches of the same compound: variation in room temperature or the temperature of the cooling water, the difference between the start up on cold equipment and the last batch of a run when the equipment is hot, efficiency of cooling batch stock before it is stacked on a skid, or an extra pass or two through a tube machine.

For example, suppose two skids are loaded with batch stock. In one case the average stock temperature is 217°F. and in the other it is 199°F. If we assume that the average temperature of the first skid will drop to 199°F. in one hour, the difference in heat history, for the stock on the two skids, will be equivalent to about 7 minutes at 262°F.

Under the pressure for production, the factory cure is often made as short as possible. If the factory cure for Compound A (Table VI) were set on the basis of batches with a heat history equivalent to 20 to 25 minutes at 262°F., it might well be set at 12 minutes at 262°F. If, for some reason, such as cold winter weather or a quick, easy run, the heat history dropped to an equivalent of 10 to 15 minutes at 262°F., the product would come out with an undercure and some compounder would start tearing his hair.

With faster curing compounds, such as Compound B (Table VII), this source of difficulty could be even more pronounced. In the first place, such compounds are generally used where a minimum cure time is desired, and in the second place, small variations in heat history have a greater effect on cure time.

There is another consequence of this constancy of vulcanization time which is interesting, if not immediately practical. Compounders often say they want an accelerator which will process safely at curing temperature. This is quite feasible from a compounding viewpoint. All that is necessary is to have factory processing so controlled that each batch of compound has essentially the same heat history.

In Figure 1 we have scorch time and vulcanization time at the same temperature. It is possible to use up

all the scorch time in processing and then cure in the vulcanization time. The object is to put the product into the cure just before the end of the scorch time. That this can actually be done is shown by the results given in Table XIII.

First, take Compound A. This stock was remilled for 24 minutes at 262°F. and showed no signs of scorch. It was then cured in a press and reached full technical cure in 12 minutes at 262°F. At the same temperature of 262°F., it could be milled safely for twice as long as it took to reach full cure in the press. The values which show the two corresponding times at temperatures of 280° and 300°F. were calculated from those at 262°F. They indicate that the stock can be milled 12 minutes at 280°F. and cured in 6 minutes at 280°F. Also, you might mill for 12 minutes at 280°F. and cure in 12 minutes at 262°F.

On the other side, we have the corresponding figures for Compound B. It was actually milled 8 minutes at 262°F. and then cured in 6 minutes at 262°F. Again, the other four figures were calculated from the experimental results at 262°F.

TABLE XIII—PROCESSING TIME VS. CURING TIME AT THE SAME TEMPERATURE

Compound A			Compound B	
Process Time	Cure Time	Temp.	Process Time	Cure Time
24 Min.	12 Min.	262° F.*	8 Min.	6 Min.
12 Min.	6 Min.	280° F.†	4 Min.	3 Min.
6 Min.	3 Min.	300° F.†	2 Min.	1.5 Min.

* Experimental. † Calculated

Conclusion

To summarize briefly, we believe the following holds true for natural rubber:

(1) Each compound has a characteristic maximum scorch time, vulcanization time, and cure time which depends chiefly on the accelerator.

(2) For any given batch of compound both scorch time and cure time are shortened by an amount equivalent to the processing heat history of the batch.

(3) The vulcanization time remains constant.

(4) These relations help to explain variations in factory cures and indicate the advantages of close control of heat history in factory processing.

Rubber Roads Are Permanent Part of Future Highway Scene

THE Natural Rubber Bureau, Washington, D. C., has conducted an independent survey of highway officials and engineers all over the country to find out what they thought of rubber roads. Answers from one in every fifteen officials, covering 47 states, would seem to indicate they think rubber roads very much a permanent part of the future highway scene. Almost 100% of the officials know about rubber roads. One-third of them already believe that the addition of rubber to asphalt is going to become a standard method of highway construction.

At the Natural Rubber Bureau Laboratory and in on-the-job tests all over the country, highway engineers and chemists are compiling information as to the exact advantages obtained by adding natural rubber powder to the asphalt mix. Up to now, this information is bearing out the rubber road's ability to bleed less in summer, crack less in winter and better withstand traffic shock.

In the survey just completed, highway engineers indicated generally that three to five years of testing would give "a fair idea of the life expectancy of new surfacing materials." This country's oldest stretch of road incorporating natural rubber powder has now been down for about four years. If the engineers' test-time estimates are accurate, it shouldn't be too long before there are forthcoming some really definitive answers on the ability of rubber roads to cut costs by adding longer life and less repair to America's pavements.

In the survey, a series of eleven specific questions were asked, some of two and three parts. One of the questions asked called for an opinion on the most important new developments in highway surfacing. Here, 12% of those questioned stated that the use of rubber was of paramount importance. When asked whether they had any knowledge of the use of rubber in roads, 94% of the officials answered in the affirmative.

The officials were also questioned as to what they believed were the advantages of rubber roads. Some 30% replied that they offered longer wear life, 27% thought they were more resilient and flexible, 9% thought they provided a better non-skid surface, while others said they were more waterproof, cracked less and cost less to maintain.

As to the disadvantages of rubber roads, 45% cited high cost, while only 4% said they do not wear well enough. Some 6% said they hadn't been tried enough, and 41% did not know enough about the subject to answer. The question was also asked if funds were available, would the officials recommend the laying of a test rubber road in their localities? Here, 67% answered yes, 20% answered no, while 4% stated that they already have such a road.

The officials were also asked, what, in their opinion, is the adequate length for a rubber road test strip. 22% called for test strips of 4,000 to 5,999 feet, or one mile, while 17% called for a test strip of 1,000 to 1,499 feet, and another 17% called for a test strip of 2,000 to 3,999 feet, or one-half mile.

When asked how long a time is necessary to get a fair idea of the life expectancy of new surfacing materials, 24% of the officials said that five years was the best figure. The officials were then asked if they would be favorably impressed with the practicality of rubber roads if they were subjected to tests of the same length, and 80% replied in the affirmative.

As to the question of whether or not the addition of rubber to asphalt will become a standard method of highway construction, opinion was evenly divided, with 33% answering yes and 33% answering no. Based upon the opinions ventured in the survey, the researchers concluded that rubber roads may well become a standard part of America's future highway picture.

A copy of the complete survey detailing in full what American highway officials think of rubber roads is available on request to the Natural Rubber Bureau, 1631 K St., N. W., Washington 6, D. C.

Information on the Handling of Diatomaceous Earth

ONE of the more recent problems that is causing some concern to the rubber industry are powders and aggregates that are prepared from diatomaceous earth and used in compounding. This material is essentially free silica which was originally in the amorphous state, but which as a result of calcination has been converted in part to cristobolite. The following data on the handling of diatomaceous earth is taken from a recent issue of the *Rubber Safety News Letter,* issued by the Rubber Section of the National Safety Council.

Hygienists state that diatomaceous earth is considered dangerous if it is used in a way to give off dust which can be inhaled by workers. The concentration of such dust should not exceed 5 million particles per cubic foot of air. There are several respirators available that meet the requirements for safely handling this material, particularly in confined areas, or any other type having the U. S. Bureau of Mines approval for pneumoconiosis-producing dusts. The full story of the exact nature and extent of the occupational disease hazard created by excessive concentration of diatomaceous earth dust is not yet known. However, it is rather generally accepted that the inhalation of crystalline silica over extended periods of time is harmful.

Many articles are being produced from diatomaceous earth, such as filteraids, fillers, insulation and other materials. Concerns using this material are giving the following advice: (a) To minimize so far as possible the dust created by the use of the material, and (b) if the nature of the use will not permit the reduction of the dust concentration to safe levels, to require the use of protective devices. Following are some specific suggestions:

1. Bag handling procedures should be modified to minimize bag breakage. Bags should be placed rather than thrown. Piles should have corner guards to prevent warehouse truck damage. If palletized, bags should be within pallet borders, not overhanging.

2. Spillage or accumulated dust should be vacuum-cleaned immediately. Sweeping is not satisfactory as it merely disperses the dust into the air, as does truck or foot traffic. Commercial, portable, industrial vacuum cleaners are available.

3. While we do not yet know what concentrations of the diatomaceous earth dust may be harmful, experience indicates that respiratory protection should be used in confined areas such as encountered in carloading.

The following is the labeling on one company's containers holding natural, uncalcined products (with the word "caution" prominently displayed): "Dicalite" materials consist of an almost pure, amorphous Diatomaceous Silica. Inhalation of silica dust over long periods may be harmful. The material should be used so as not to create dust or—if this is not possible—employees should have adequate protective devices.

On containers of calcined products, the following will appear (again with the word "caution" prominently displayed): Dicalite" materials, derived from diatomaceous earth, are almost pure silica—partly amorphous and partly crystalline. Inhalation of silica dust over long periods may be harmful. The material should be used so as not to create dust or—if this is not possible—employees should be equipped with adequate protective devices.

New Method for On-the-Spot Cable Splicing

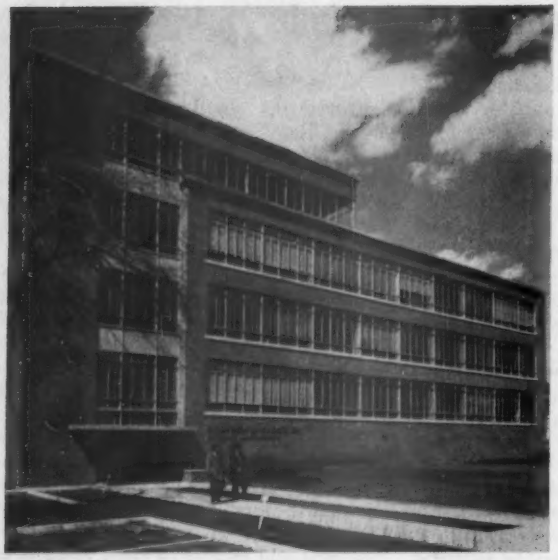
A NEW and economical method for quickly splicing heavy trailing cable on the job uses Vinylite resin plastisols to help restore mechanical, electrical and dielectric properties at the splice. Fluid at room temperature, Vinylite resin plastisols formulated and manufactured by the Chemical Products Corporation, East Providence, R. I., are changed from liquid to solid state with the application of heat. This property plays an important role in the economical cable-splicing system that was developed by the Consolidation Coal Company, Fairmont, W. Va. Tough, flexible Vinylite plastic has excellent insulating properties and resistance to moisture, abrasion, grease, oils and most chemicals; it also withstands temperature and humidity extremes to which such cable may be subjected.

A single operator wheels a combination workshop and supply cabinet to the scene of a cable-break and permanently splices two or three-conductor cable, copper size No. 4, 2 or 1, in approximately 30 minutes. Trimmed cable ends with a short piece of jacket cut away from each end are placed in a carbon mold for copper-thermit welding of both conductors. Separate cartridges, ignited with a torch igniter, are used for each conductor, but both are spliced simultaneously.

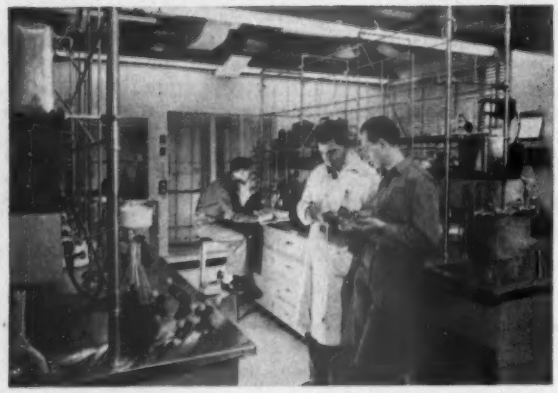
With rough runners trimmed off, the splice is ready to be wrapped in a piece of split tubing pre-formed of Vinylite resin plastisol which separates and insulates the conductors. To make the separators, heated rods of correct diameter and spacing are dipped into Vinylite resin plastisol. Split lengthwise, the tubings are removed from the rods and cut to length as needed. Holes punched in the separator improve bonding with the finished jacket. The separator is secured with insulating adhesive tape; jacket ends are cleaned, roughened and coated with an adhesive.

The spliced cable is then laid in an aluminum mold on top of a small amount of Vinylite resin plastisol placed in the lower mold cavity to center the splice. Separate molds for each cable size consist of two sections, each containing two 150-watt heating units. A cable attached to the repair cart supplies 250-volt direct current. With the mold sections latched together over the splice, a conventional hand-operated grease gun is used to force Vinylite resin plastisol into the mold. After curing five minutes at 325° to 375° F., the cable is removed, cooled, and excess plastisol is trimmed off.

This one-man operation is economical—cost per splice is about $1.50 for No. 4 three-conductor cable. Labor costs for installing new cables are eliminated and spare cable inventories are reduced by using this on-the-job splicing method.



Cabot Laboratories Feature Extensive Facilities



A completely equipped Organic Laboratory conducts research in the field of high polymers, principal market for Cabot plasticizers, carbon blacks and other Cabot pigments.

THE recent opening of the Godfrey L. Cabot Research Laboratories on famous "Research Row" in Cambridge, Mass., marked an important milestone in the history of the Cabot Companies. The accompanying photographs point out only some of the extensive and varied facilities which Cabot has assembled for its testing and evaluation programs. Housed in a modern structure, the laboratories provide means for a complete study of a given project from the evaluation of raw materials to pilot plant production. As technical headquarters for Godfrey L. Cabot, Inc., the new laboratories will conduct the major portion of the companies fundamental scientific research.

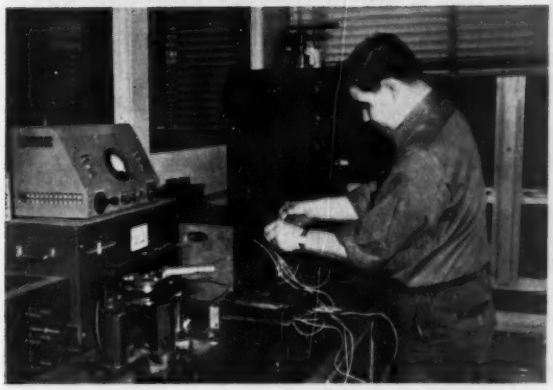
Facilities offered at the new research headquarters include a compounding laboratory, a physical testing laboratory, a pigments application laboratory, a ceramics laboratory, an organic laboratory, an analytical laboratory, an electronic microscope laboratory, a physical research laboratory, a pilot plant area and an extensive library. All the laboratory units incorporate the latest in scientific equipment and are staffed by qualified personnel.

More than 2,500 rubber and plastics stocks are compounded and evaluated in the Cabot laboratories during the course of a year. The Compounding Laboratory, shown above, is completely equipped for the compounding of carbon blacks, clay, alumina and silica pigments, pine tars and plasticizers, in all types of rubber and plastics stocks.

The Pigments Application Laboratory investigates and evaluates various Cabot products in protective and decorative coatings and in printing inks. Ball mills, roll mills, and a variety of high and low speed mixing equipment are used in preparing dispersions of all types. Flow meters, viscometers, the nigrometer and other test equipment are used.

An NBS Strain Tester is used to determine the tensile, modulus and elongation values of compounds used in the Physical Testing Laboratory (left).

Two stories high with an area of 1,500 square feet of floor space, the pilot plant area is used for the testing and evaluation of products and processes on pilot plant scale (right).



An extensive array of electrical testing equipment is used to evaluate the electrical properties of carbon black-loaded rubber and plastics stocks. Resistance of 10^{15} ohms-cm. may be obtained in an insulating stock for cable coatings, or conducting stocks with a resistance of less than 10 ohms-cm. can be prepared.

The Research Library is stocked with an impressive collection of specialized technical publications drawn from the fields of science and industry in which Cabot is primarily interested. Experienced research librarians conduct literature searches, reviews and surveys, and offer editing and translating services.

Tests to meet individual customer preferences are conducted in the Physical Testing Laboratory, equipped with a wide variety of standard apparatus for evaluating the physical properties of rubber and plastics compounds.

Magnification of from 10 to 20,000 times is provided by modern optical instruments in the Electron Microscope Laboratory. Equipment includes an electron microscope, surface reflecting microscopes and an improved precision microtome.

Editorials . . . . . .

Disposal Hearings

AS REPORTED elsewhere in this issue, hearings are currently being conducted in Washington, D.C., before a House Armed Services Subcommittee on HR 5425. This is the bill providing for disposal of the government-owned synthetic rubber production facilities recently introduced in the House by Rep. Paul W. Shafer (Rep., Mich.), the details of which are also reported in this issue. A similar bill has been introduced in the Senate by Senator John W. Bricker (Rep., Ohio), and a subcommittee of the Senate Armed Forces Committee is expected to begin holding public hearings within the next few weeks.

It was quite evident from the testimony presented to date that the major rubber manufacturers are definitely interested in acquiring copolymer plants, although they would like to see some modifications made in purchase requirements, and equally that the smaller rubber manufacturers are a little leery of such acquisition by the "Big Four." The voices of almost fifty of the smaller manufacturers were heard, although several of the witnesses spoke for groups of such manufacturers. Even some of the medium size rubber companies expressed apprehension over the necessity of securing a basic raw material from competitive sources.

For example, Charles F. Johnson, president of the Endicott-Johnson Corporation, representing a group of small and medium size rubber companies, including American Biltrite, Cooper Tire, Wooster Rubber, and Johnson Rubber, as well as his own company, told the subcommittee that acquisition of most of the government plants by the major tire companies "would be a serious blow to the American economy" and that it would be "dangerous" to have the synthetic rubber field dominated by these companies. He added that if the pending Shafer bill is enacted into law without change it could easily result in "a devastating shortage of synthetic rubber supplies" and could conceivably force "many small rubber fabricators out of business." Mr. Johnson urged that the law provide that no company be allowed to buy more than one butadiene and one copolymer plant and that the plants sold be required to produce at least 650,000 long tons of synthetic rubber a year rather than the 400,000 tons now covered in the bill.

Another witness, Robert A. Winters, executive director of the Rubber Heel and Sole Institute, presumably voicing the thinking of most of the smaller heel and sole producers, testified along similar lines. Pointing out that heel and sole producers must be able to obtain supplies of synthetic rubber at prices competitive to those obtained by the major rubber companies, which also have heel and sole divisions, Mr. Winters urged that a strong effort be made to "get most of the general-purpose synthetic plants into the hands of non-big-four rubber companies or non-rubber goods manufacturing companies." He asked that the disposal law be so worded that a large percentage of the production cannot be captive. Among specific changes requested by Mr. Winters was a provision in the law that if more than one GR-S plant is sold to any of the "Big Four" that for 15 years they be required to allocate at least 25 percent of their synthetic rubber production to the free competitive market at competitive prices.

The arguments advanced by these "independents" with regard to their being left dependent on powerful competitors for their supply of a basic raw material or to being subject to the possibly monopolistic pricing of such material, as pointed out by the *Wall Street Journal*, are most reasonable. But the number and variety of long-term controls which they suggest be imposed on purchasers of the synthetic rubber plants are more than enough to discourage their acquisition, if not to render it quite impracticable. Recognizing the possibilty of a complete impasse due to such demands, one of the smaller manufacturers even went so far as to suggest that the government remain in the synthetic rubber business and continue to operate any and all plants it fails to sell. This would certainly present a unique problem in government-industry relationships.

Frankly, we feel that the small and medium size rubber manufacturers are worrying needlessly. The antitrust laws, the decisions of the courts based on these laws, and the constant vigilance of the Federal Trade Commission are definite safeguards against monopolistic operations. Further, big business is generally very careful to guard against the cry of monopoly and often leans backward to provide cushions for the smaller producers in industry. This was quite evident during the recent war years when most of the larger rubber manufacturers subcontracted with smaller companies to keep them going even in instances where they could have retained all the gravy for themselves. We are not suggesting that all of the synthetic rubber facilities should go to the major rubber companies, but if such should prove the case we are fairly certain that the competitive spirit which exists between these companies will guarantee synthetic rubber supplies to the entire rubber manufacturing industry at reasonable and competitive prices.

NEWS OF THE MONTH

HEARINGS ON SHAFER DISPOSAL PLAN BEGIN AS SENATE INTRODUCES DIFFERENT MEASURE

ON June 3, a subcommittee of the House Armed Services Committee began public hearings in Washington, D. C., on a bill authorizing sale of the government-owned synthetic rubber plants. The measure was authored by Representative Paul Shafer (Rep., Mich.), chairman of the subcommittee, and was introduced following his return from the recent International Rubber Conference in Denmark. One day later, Senators Homer E. Capehart (Rep., Ind.) and John W. Bricker (Rep., Ohio) introduced in the Senate another bill calling for the same ends, but differing in some aspects from the House measure. Senate hearings on its bill were due to start the week of June 24, with the possibility that these would begin before the House subcommittee had concluded its hearings.

The Shafer bill would have the president appoint a three-man commission of independent citizens to obtain bids and negotiate sale of the synthetic plants. The commission would then submit one overall disposal plan to Congress. Under the plan, Congressional approval would be required of all sales, meaning that actual disposal, in all likelihood, would not take place before next year.

If neither branch disapproves the proposed sales during a 30-day period of continuous Congressional sessions, the sales would become final. If Congress disapproves them, or if the commission comes up with no recommendations, the Rubber Act of 1948, authorizing government operation, would be extended until March 31, 1956.

400,000-Ton Production

The Shafer bill also provides that the commission's plan must result in the potential manufacture of 400,000 tons annually of GR-S and 45,000 tons of Butyl rubber. Unless these amounts of rubber production could be assured by the purchasers, the commission would not recommend any sales to Congress.

Plants not sold would go into "standby" and could not be sold for two years. The government's alcohol-butadiene plants could be leased, if the commission could arrange this, but for periods of not less than one year nor more than three years. The bill also continues the government operation of the research laboratory at the University of Akron.

Mr. Shafer said his disposal plan would have three main principles in view: To maintain national security, to create a competitive pattern in the industry, and to return to the government the "full fair value" of the plants. No person could serve as commissioner if he were engaged in the rubber or petroleum industry or any part of the chemical industry that could manufacture feedstocks for synthetic rubber.

The bill also provides that bids must be taken on the government's plants not less than 45 days after the commission has been appointed nor more than 90 days. After that, the commission would be given a four-month period to negotiate the sales contracts.

Persons who bid on the government facilities would have to explain to the commission their arrangements for getting feedstocks and their ultimate plans for disposing of the end products. Bids would have to be accompanied by a 10% deposit of the gross bid, up to $1,000,000 for each facility. Mr. Shafer admitted this deposit requirement was "a rather extreme departure" from the original RFC disposal plan, but added it was aimed at eliminating speculators from bidding on the plants. Another provision designed to eliminate speculators, he said, would be a requirement of proof of technical competence on the part of the bidder.

Mr. Shafer pointed out that his bill would set up certain criteria to guide the commission in negotiating the sales contracts. These would include judgments on the technical competence of the bidders, whether the bidders plan to take care of small consumers, and a judgment as to whether the purchasers "actually intend to operate the facilities for the manufacture of synthetic rubber and its feedstocks." The bill provides that purchasers be American citizens or companies controlled by American citizens.

The measure also contains a national security clause to make sure the facilities will be available in case of war or national emergency. The commission would be required to seek the advice of the Attorney General in drawing up its sales plan to make sure that the plan will bring about "fair and effective competition" in the industry. Life of the commission would end on July 1, 1954.

Synthetic rubber on hand at the time the plants were sold would, under the bill, be sold to previous consumers on the basis of the history of their past purchases. The RFC report recommended that these stocks be sold to the firms buying the plants.

One of the chief differences between the Shafer bill and the measure introduced in the Senate is in the composition of the agency that would set disposal policy. The Shafer bill calls for a three-man commission of private citizens, whereas the Senate version would have the board made up of the Secretary of the Treasury, the Attorney General and the General Services Administrator.

Another key difference is that the Capehart-Bricker bill would give the new disposal board final say on the sale of the plants, whereas the Shafer bill would give Congress the opportunity to veto the final "package" disposal. The Senate bill also provides for the appointment by the commission of a disposal agent at a salary of $17,500 a year who would report to it and act as its agent.

Reduces Bid Deposit

The Senate measure suggests that the bid deposit of prospective purchasers be reduced to 1% of the bid, not to exceed $100,000, as against the 10% or $1,000,000 called for in the Shafer bill. In the Senate version, prospective purchasers would have to prove that they are good "security risks" and financially responsible before they could submit a bid.

Bidders would have to identify whom they were bidding for and would have to indicate what conditions they would be willing to accept to assure small business a fair share of synthetic rubber. The Senate proposal also calls for an appropriate national security clause assuring that the facilities would be available when needed and as determined by the President.

The Senate bill also drops the Shafer provision that the plants could only be sold to American citizens or companies in which Americans own 51% of the stock. It is believed this was done because one of the oil companies (Shell), a prospective purchaser, is partially owned by British interests. The Senate bill also specifies that no one who helps negotiate or make contracts of sale for the government shall

be employed by any one of the bidders for two years after the sale.

House Hearings Begin

The first witness to appear before the House Armed Services subcommittee on June 3 was Kenton R. Cravens, RFC administrator. Mr. Cravens urged that Congress bring the Attorney General into the sale to promote free competition and to protect buyers of plants from the anti-trust laws. Democrat subcommittee members, led by Representative Durham of North Carolina, challenged this proposal as undue protection for big business.

Mr. Shafer, in opening the hearings, emphasized the need for haste in selling the plants. Otherwise the government might build more plants and stay in the rubber business, he said. He granted that his bill is open for changes and later told the press he would even forego having his name on the law if it would speed disposal. Later in the day, Mr. Shafer met with Mr. Bricker, and stated that "none of us are very far apart in our thinking on this."

In his opening statement, Mr. Shafer also said that it would be wrong to have RFC, or any other agency of the government, administer this disposal program. "Companies now operating rubber facilities have no vested interest in any of the facilities and provisions of this bill do not give any advantage to the present operators."

Mr. Shafer also asked Defense Department spokesman Fred Bates, Jr., for advice on his provision for 400,000 ton minimum total plant capacity to be contracted for before any sales could become final. Mr. Bates, who heads the Rubber and Chemicals Division of the Munitions Board, said 450,000 tons would be a better figure.

Question Security Aspect

Representatives Durham, Doyle (Calif., Dem.) and Cole (N. Y., Rep.) questioned Mr. Bates closely on national security aspects of selling the plants. Mr. Bates replied that the Munitions Board and the Secretary of Defense had authorized him to say that disposal will not endanger security. The rubber stockpile, which he supervises, is nearly complete, he added.

Mr. Cravens, in his testimony, said that Congress should have a final look at the over-all disposal program, as recommended in the Shafer bill. However, he said, the independent disposal committee called for in the bill should be replaced with the Secretaries of the Treasury and Commerce and the director of defense mobilization. The RFC, he said, should be the actual disposal agent, subject to control of the committee.

He also opined that the 10% deposit on each bid should be cut to 2½% to encourage companies to bid on more than one plant. The $1,000,000 ceiling should be cut to $250,000. The 2½% mortgage rate for paying off purchases of plants is "wholly unrealistic" and should parallel interest rates current at the time in private banking. The Shafer requirement of "technical competence" of bidders should be removed, he declared. "Competent management is inherent where many millions of dollars of capital is required," Mr. Cravens contended.

He also stated that the Shafer bill citizenship requirement is discriminatory and might render ineligible some companies. The 400,000 ton requirement, he said, is an inflexible yardstick, and should be replaced with a tonnage decided by Congress at the time of final approval of sales.

In subsequent appearances before the subcommittee, P. W. Litchfield, chairman of the board of the Goodyear Tire & Rubber Co., and John L. Collyer, president of the B. F. Goodrich Co., both stated that the government should receive, and industry is ready to pay, a "full, fair price" for the synthetic rubber plants. Mr. Litchfield told the subcommittee that competitive industry can and will amply, sufficiently and economically supply the nation's requirements of synthetic rubber.

Cites Risks Involved

Mr. Collyer called the subcommittee's attention to the risks, "very real risks," that private industry faces in the operation of the facilities, risks that are now faced by the government. Both Mr. Collyer and Mr. Litchfield heartily endorsed the provisions of the Shafer bill.

Mr. Litchfield contended that the plants already have returned the full original investment of the American public many times over in the form of national security, and also through the stabilization of natural rubber prices. "Nevertheless, the sale of the remaining facilities at this time should enable the public to realize a further substantial return on its investment," he said. Once the plants are sold he held that the government should not engage in competition with private industry.

Other things being equal, he said, the plants should be sold to operators with proven ability to manufacture synthetic rubber and its components. The competitive pattern in the industry should be observed as closely as possible, he declared. Once again he urged the creation of a reserve stockpile of at least 200,000 tons of GR-S, first to increase our national security, and second, to insure an orderly transition.

Mr. Collyer contended that the risk of obsolescence is so great that Congress might well agree that investors in rubber facilities be permitted to amortize them more rapidly than can be done under present tax regulations. Mr. Collyer declared that the Shafer bill "provides a reasonable and practical procedure."

The Goodrich executive stated that the disposal program should permit the purchase of one or more of the facilities embracing one or more steps in the manufacture of synthetic, wherever these facilities are integrated. This, he said, will enable the government to realize a fair value for these plants and promote efficient production.

He also observed that facilities which have actually produced and which can now produce not less than 500,000 tons annually must be sold in the interests of national security. He also declared that there is no more need for government-financed research in rubber after the production facilities are disposed of to private industry. Mr. Collyer expressed the opinion that he would be "extremely disappointed if the disposal could not be carried out by March 31, 1954."

U. S. Rubber Ready to Bid

George M. Tisdale, vice-president of the U. S. Rubber Co., in an appearance before the subcommittee, said that his company is ready to bid. He endorsed the formation of a disposal commission stating that he thought it superior to any one individual or to a departmental committee or board. Mr. Tisdale also spoke of the present operating teams as the real national defense security in this matter. But he admitted to subcommittee members that he has scant hope of getting this principle accepted.

R. W. Thomas, vice-president of the Phillips Petroleum Co. and of the Phillips Chemical Co., stated before the subcommittee that his company wants to buy the Borger, Texas, GR-S and butadiene plants, and will sell rubber, probably at from 20 to 26c a pound, to the smaller consumers lacking a "captive or affiliated supply of synthetic rubber."

His assurance that small rubber consumers will have a source of supply answered one of the problems weighing on the subcommittee. The subcommittee's counsel, John R. Blandford, also pointed up the heavy responsibility resting on Phillips in assuring that the government receives a fair return for the Borger plants. Mr. Blandford said it is unlikely that there will be competition in bidding for these plants and cautioned the company to bid high. "You have an obligation not to bid low for fear of jeopardizing all disposal," Mr. Blandford told Mr. Thomas.

Osgood V. Tracy, general manager of the Chemical Products Department of the Esso Standard Oil Co., said his company is "ready to bid tomorrow" for the Butyl rubber plant in Louisiana, and will license and provide the know-how to others who want to build them.

Impetus to Construction

Government ownership of synthetic rubber plants, he declared, has frustrated plans of private industry to build new plants. Disposal, he said, will provide a big impetus to private plant construction and research in synthetic rubber.

Two other rubber company officials, Everett Morss, president of the Simplex Wire & Cable Co., and John M. Bierer, president of the Boston Woven Hose & Rubber Co., said that they want no special protection to assure a continued supply of synthetic rubber to small consumers should the plants be sold almost entirely to the major rubber firms.

Letters and telegrams from some of the smaller rubber companies endorsing the Shafer bill were also read at the hearings. These included those from the Faultless Rubber Co. and the Midwest Rubber Reclaiming Co. which endorsed the "purposes" of the bill.

Spokesmen for some smaller rubber users, however, urged Congress to make sure that the "Big Four" do not get the lion's share when the government finally sells the synthetic rubber plants. Robert A. Winters, executive director of the Rubber Heel and Sole Institute, for example, said that his organization's thirteen members could be "squeezed out of the market" for lack of supplies if the synthetic plants are put in the hands of the large companies.

"We strongly believe," he said, "that a strong effort should be made by the government to get most of the GR-S plants in the hands of non big-four rubber manufacturing companies." Mr. Blandford told Mr. Winters, after the latter had suggested that the government continue to operate some of the synthetic rubber plants, that "no one will buy a plant" if they have to meet competition from the government.

Small Users Protected

Mr. Shafer also assured the witness that small users will be protected by the provision of the bill requiring that all sales of rubber plants must be reviewed by Congress before they can become final. "If we don't like the way negotiations turn out," he added, "we don't have to accept the sales contracts."

Charles F. Johnson, president of the Endicott Johnson Corp., speaking for his own company and the American Biltrite Rubber Co., Cooper Tire & Rubber Co., Johnson Rubber Co., and the Wooster Rubber Co., warned against the possibility of any single group winning control of synthetic rubber. Mr. Johnson said the group which he represented was definitely interested in buying a plant, provided "we can buy it at a reasonable price comparable to other bids."

L. S. Buckmaster, president of the United Rubber Workers, in a statement for the subcommittee on this point, said: "As is well known, the rubber fabricating industry of today is dominated by four major companies. In the disposal of the synthetic plants, special care must be exercised . . . so as not to increase this already overwhelming domination by these four rubber companies."

A. L. Freedlander, president of the Dayton Rubber Co., spoke for the Copolymer Corp. at the subcommittee hearings. Dayton Rubber and seven other rubber companies formed Copolymer to operate a government-owned synthetic plant. Mr. Freedlander said that Copolymer wants to buy this plant. He drew criticism from the subcommittee, however, when he suggested that present operators be given preference in bidding for plants and that all buyers be compelled to license new technical developments to other plant operators.

Mr. Blandford attacked another suggestion that the government stockpile synthetic rubber, contending that the proposal "is not to protect national security but to provide a price weapon against natural rubber producers and the reclaimed rubber industry. If the price of natural rubber were to go up, you would have us dump synthetic on the market," he said.

New Swedish Synthetic

Discovery of a means of producing rubber from cellulose spirits has been claimed in Sweden, after a four year experimental program financed by the Swedish Spirit and Wine Co. and the State Research Council. The new synthetic is said to offer excellent wearability, but has the disadvantage of being more expensive than American types and a tendency to crack easily when bent.

In other testimony, William P. Gee, of the Texas Co., predicted disposal "will start in action highly competitive research and development work in synthetic rubber," and urged some assurance against anti-trust suits to permit oil companies to make agreements to sell butadiene to synthetic rubber plants.

As the hearings went on, it was apparent that Mr. Shafer was aiming at March 31, 1954, as the date for complete transfer of the plants to private ownership. Both he and Mr. Blandford made it clear that they regard as the cornerstone of this hope the subcommittee's proposal to have disposal negotiations carried out by a commission drawn from outside the government.

Industry supporters of the Capehart-Bricker measure have indicated privately that they won't press for the governmental board if doing so threatens a Congressional fight on the legislation. Mr. Shafer's concern for getting the whole job out of the way by April 1, before the November election battle is under way, reflects the main concern by disposal advocates, the possibility that Senate Democrats may try to kill the bill on two grounds—as a "giveaway" of a profitable public enterprise, and a needless risk to the national security which has been assured so far under government operation of the plants.

While all of the major companies supported sale of the plants at a "full, fair value," attempts to get some estimates of what this means in dollars and cents were not very successful. Mr. Blandford indicated the government should get between 75 and 80% on its investment in those plants sold—$300,000,000 to $350,000,000. These figures were set forth by Mr. Shafer in public statements in the past few months.

(Editor's Note: The House Armed Service Subcommittee hearings continued as this issue went to press. Subsequent developments will be reported in the July issue of Rubber Age).

Comments on Rubber Conference

Before opening the subcommittee hearings on synthetic plant disposal, Mr. Shafer and Mr. Blandford attended the International Rubber Conference in Copenhagen. In a statement at the conference, Mr. Shafer predicted that members of Congress would not be present at the next conference in May of 1954. By that time, he said, the government-owned plants will be in the hands of private enterprise.

Despite this fact, he said, Congress will continue to be keenly interested in the world rubber situation and "the welfare of our friends in the rubber-producing countries."

One of these rubber-producing countries, Ceylon, extended an invitation to the International Rubber Study Group to hold the next conference in that country. Ceylon recently concluded a "rubber for rice" trade with Communist China which has been criticized in some quarters, particularly in the United States.

Reports on Alcohol Buying

While Congressional bodies and international groups were concerned with "high level decisions" on the rubber industry, work-a-day problems relative to the production of synthetic rubber in the United States continued to present themselves. RFC, for example, is waiting for a decision by the Bureau of the Budget on the future size and character of the entire synthetic rubber program. There is no assurance that RFC will buy any more alcohol for the program once its current supply runs out.

RFC is said to have enough alcohol under contract to run the alcohol-butadiene plants through June 30, and perhaps longer. RFC would like to continue these plants in operation through the coming fiscal year in order to build up a large inventory of synthetic rubber. It asked the Budget Bureau a few weeks ago for permission to build its inventory from the current 25,000 ton level to 122,000 tons by July 1, 1954.

To meet this latter figure, RFC proposes to run the synthetic rubber plants at a 750,000 ton yearly level through the coming fiscal year, with 100,000 tons of rubber to be made from alcohol-butadiene, and the balance from lower-cost petroleum butadiene. The rubber industry seems to be solidly behind the RFC plans to build a large GR-S inventory.

The Budget Bureau's objections come on two counts: It doesn't like the idea of tieing up a lot of money in a heavy inventory which might have to be sold at a loss if shortages failed to materialize, and the foreign policy aspect of the situation. Asian natural rubber producers have raised strong objections to continued production of alcohol-butadiene-based GR-S, contending that the RFC 23c selling price doesn't cover production costs.

RFC has informed the Budget Bureau that at alcohol prices of under 40c a gallon, it can produce GR-S from alcohol-butadiene at about the 23c level. RFC expects to make a profit of $50,000,000 on the 650,000 tons of petroleum-based GR-S, which costs about 20c a pound to produce and sells for 23c.

It has been suggested that if RFC is permitted to continue the production of alcohol-butadiene GR-S, the selling price should be raised to reflect the same ratio held by the petroleum-based rubber. This view is reported to have support in the Treasury Department, but it has been vigorously opposed by the consuming industry.

NEAR-RECORD ATTENDANCE MARKS RUBBER DIVISION MEETING AT BOSTON

The 63rd meeting of the Division of Rubber Chemistry, held at the Hotel Statler in Boston, Mass., on May 27, 28 and 29, was marked by a registered attendance of slightly over 1,000 members and guests and an estimated over-all attendance of more than 1200. This made the meeting one of the largest division meetings to be held in recent years.

The Boston meeting featured the presentation of 22 technical papers, a luncheon meeting of the 25-Year Club, a special tribute to C. C. Davis on the 25th anniversary of *Rubber Chemistry and Technology*, selection of the 1953 Charles Goodyear Lecturer, attendance at a Boston "Pops" Concert, the usual business meeting, a special ladies' program, and the divisional banquet. It was one of the most active meetings in years and set a new standard for future meetings in other cities.

The 22 technical papers, abstracts of which appeared in our last issue, were spread over three sessions, with Seward G. Byam (DuPont), division chairman, presiding at the first session, Joseph Haas (Hodgman Rubber) at the second, and A. W. Bryant (Binney & Smith) at the third. This matter of presiding over sessions was established by Mr. Byam at the Los Angeles meeting and will continue during his tenure as chairman.

Among subjects covered by the technical papers were those on some successful applications of Chemigum SL, Goodyear's new polyester rubber; new heat endurance studies covering Hypalon, DuPont's chlorosulfonated polyethylene; a report on better tread wear in tires utilizing the new SAF blacks; tougher products from new types of oil-extended rubbers; a process for making synthetic rubber 50 times as fast as the conventional method, and a new theoretical approach to the protection of rubber from deterioration by oxygen. As usual, several of the papers were marked by spirited question-and-answer periods.

Meeting of 25-Year Club

As usual, activities at the meeting got under way semi-officially with a luncheon meeting of the 25-Year Club. This was held on Wednesday, May 27, in the Bay State Room of the Hotel Statler, with W. E. Kavenagh (Goodyear) presiding as chairman. After a brief speech of welcome from Mr. Kavenagh, a minute's silence was observed for six members who have passed away since the last meeting. These were C. G. Cashion, R. A. Crawford, E. G. Croakman, G. E. Griffin, D. A. Shirk, and T. J. Starkie.

Following usual practice, E. B. Curtis (Vanderbilt), a member of the Executive Committee of the club, conducted a contest to determine the oldest member present in total years of service in the rubber industry. This time the honor went to two individuals — Charles R. Haynes, of the Binney & Smith Co., and Harold B. Fuller, who retired a few years ago as sales representative of the Pequanoc Rubber Co. — both of whom have had 49 years of actual experience in the rubber field. Special mementos, in the form of money clips, were presented to both men. The presentations were made by A. A. Glidden, formerly associated with the Hood Rubber Co., himself a recipient of a memento from the club on a previous occasion. A count of hands showed that approximately 15 new members were present at the club's luncheon.

Before the close of the luncheon, special 25-Year Club membership pins were distributed to all those present through the courtesy of Godfrey L. Cabot, Inc. The attractive pins, which can be worn on coat lapels, will be distributed to members not present at the Boston session at subsequent meetings of the club. Approximately 195 members were present at Boston.

Reports at Business Meeting

The business meeting of the division, with Mr. Byam presiding, was held toward the close of the technical session on Thursday, May 28. After a minute's silence for departed members, including E. C. Dill, G. L. Hammond and H. M. Smallwood, Mr. Byam reported that approximately 75 members from the East had attended the 62nd meeting of the division which was held in Los Angeles last April. He also stated that sufficient funds were in the Library Fund to assure continued operation of the Division Library at the University of Akron until the spring of next year. With regard to the monograph on synthetic rubber, he said that all copy was in the hands of the printer, but that it will take another year before actual publication of the book.

It was announced that selections of sites for the 1954 and 1955 meetings had been made by the Executive Committee, as follows: Spring, 1954 — April 14-16, Brown Hotel, Louisville, Kentucky, with Fred C. Wagner (DuPont) as general chairman; Fall, 1954 — September 11-13, Commodore Hotel, New York City, with Joseph Breckley (Titanium Pigment) as general chairman; Spring, 1955 — Detroit, Michigan; Fall, 1955 — Philadelphia, Penna. The Louisville, Detroit and Philadelphia meetings will be held apart from those of the parent society. The 1953 Fall Meeting will be held at the Sherman Hotel in Chicago on September 9-11, with Herman Boxser (Acadia Synthetic Products) as general chairman. A. E. Lawrence (Phillips Chemical) has been named head of a special committee to investigate future meeting sites. (EDITOR'S NOTE: There has been some talk of holding a joint meeting with the Rubber Chemistry Division of the Chemical Institute of Canada in Canada in either 1956 or 1957.)

A report by R. G. Seaman (*India Rubber World*) for the Nominating Committee indicated the following slate: *Chairman*, J. C. Walton (Boston Woven Hose); *Vice-Chairman*, John Ball (Midwest Rubber Reclaiming) and G. R. Cuthbertson (U. S. Rubber); *Secretary*, F. H. Amon (Cabot) and A. M. Neal (DuPont); *Treasurer*, Amos Oakleaf (Phillips Chemical). The slate also included a list of directors representing various local rubber groups. The election for 1953-54 officers will be conducted by letter ballot as usual, and results will be announced at the Fall Meeting in Chicago.

In two additional reports at the business meeting, John J. Hoesly (Goodyear), chairman of the Membership Committee, stated that total subscriptions to *Rubber Chemistry and Technology*, as of May 1, 1953, amounted to 3,276, and Mr. Byam announced that the Goodyear Medalist Committee had selected Dr. John T. Blake, director of research of the Simplex Wire & Cable Co., Cambridge, Mass., as 1953 Charles Goodyear Lecturer. Dr. Blake will present his lecture and receive the Charles Goodyear Medal at the Fall Meeting in Chicago. (EDITOR'S NOTE: A biography of Dr. Blake appears elsewhere in this issue.)

Tribute to C. C. Davis

The divisional banquet, held in the ballroom of the Hotel Statler on Thursday evening, May 28, was marked by a special tribute to Dr. C. C. Davis, chief chemist of the Boston Woven Hose & Rubber Co., who has been editor of *Rubber Chemistry and Technology* since it was started by the division in 1928. A silver replica of the famous Paul Revere Bowl was presented to Dr. Davis, and a huge bouquet of flowers to Mrs. Davis in recognition of her own valuable assistance on the publication.

After first introducing the members and guests sitting on the dais, Mr. Byam, who presided at the banquet, presented Walter Murphy, editor of *Industrial and Engineering Chemistry*, who read a letter from Alden Emery, secretary of the A.C.S., in tribute to Dr. Davis and who added his own personal commendation. Dr. Harry L. Fisher, professor of rubber chemistry at the University of Southern California and president-elect of the society, then reviewed the history of *Rubber Chemistry and Technology* since its inception. Dr. Fisher, who happened to be chairman of the Rubber Division in 1928, read excerpts from some of the correspondence between Dr. Davis and himself relative to the birth and growth of the division's journal.

Dr. Blake, co-author with Dr. Davis of "Chemistry and Technology of Rubber" and a past chairman of the division, then delivered a scintillating talk on Dr. Davis,

Harry L. Fisher

the president-elect of the society addressing the divisional banquet

the man, and reviewed some of his activities in the rubber field, including the development of the Bierer-Davis Oxygen Bomb and his long-time effort in connection with the rubber section of *Chemical Abstracts*. Dr. Blake stressed the assistance given to Dr. Davis by Mrs. Davis in all of his publication work.

Talk on Atomic Energy

Another feature of the banquet was an address by Dr. Harry A. Winne, vice-president of the General Electric Co., on "Energy from the Atom." Dr. Winne, one of the five co-authors of the Acheson-Lilienthal Report prepared in 1946, which proposed a master plan for the international control of atomic energy, expressed an optimistic point of view with regard to eventual industrial applications of atomic energy, but warned that it will take many years before such applications are commercially and economically feasible.

The speaker pointed out that current developments in the field of atomic energy are in what he called "gadgets," such as the atom bomb and atomic-powered submarines. Such uses, he said, will not sustain an industry and are the result of "crash" programs. He compared costs between conventional and atomic-controlled power plants, and said that it may be 15 years before the latter type plants will be economically competitive. He concluded his talk on an optimistic note, but again warned that it will be many years before we learn to properly utilize atomic energy for industrial applications.

Special entertainment was furnished at the banquet in the form of Wally Cox, the famous "Mr. Peepers" of radio and television, who gave several of his well-known characterizations, including the "tough little kid." Mr. Cox was introduced by Owen Brown, Jr. (Cabot), who also told a few humorous stories.

Other Highlites at Meeting

Other highlites at the meeting included a visit to the Boston "Pops" Concert and tours of various rubber and other plants. The "Pops" concert, which was held in Symphony Hall in Boston, featured an interesting group of classical, semi-classical and popular selections, with Arthur Fiedler conducting. Symphony Hall has about 2200 seats, and more than half were occupied by members and guests of the Rubber Division. The decision to include a visit to the "Pops" during the division meeting was acclaimed on all sides.

The plant tours included visits to the Boston Woven Hose & Rubber Co., the new Cabot Laboratories, the Dewey & Almy Chemical Co., the Hood Rubber Co., and the Simplex Wire and Cable Co. These plant visits are becoming an integral portion of division meetings, and their popularity is attested to by the fact that not a single extra ticket for any tour was available at Boston.

The specially-arranged Ladies' Program was also a success, with over 100 wives and daughters of members participating in some of the events. Among these was a Get-Acquainted Tea Party at the Statler, a flight over Boston through the courtesy of Northeast Airlines, a sight-seeing trip of "Old Boston," and a visit to the famous Gardner Museum. The ladies were very much in evidence at the "Pops" concert and the divisional banquet.

Seward Byam (DuPont), division chairman, presenting a silver replica of the famous Paul Revere Bowl to Dr. C. C. Davis (Boston Woven Hose), in recognition of his services to the Division of Rubber Chemistry.

Credit to Local Committee

The smooth functioning of the 63rd Meeting of the Rubber Division, outside of the room situation, was due in large part to the Local Arrangements Committee, which was ably headed by H. W. Sutton (Boston Woven Hose) as chairman and B. H. Capen (Tyer Rubber) as vice-chairman and treasurer. The initial day of the meeting was marred somewhat by the high-handed action of the Hotel Statler where room reservations were concerned, with few people securing rooms or suites until quite late in the day, and with some forced to go to other hotels.

Others who contributed to the success of the meeting included the following chairmen of various units: Registration, Edward D. Covell (Stedfast Rubber); Banquet, Owen D. Brown, Jr. (Cabot); Information, Harold L. Liddick (Davidson Rubber); Equipment, John A. Williams (Haartz - Mason); Pops Concert, Alan W. Bryant (Binney & Smith); Plant Trips, William Walker (Hood Rubber); Publicity, R. S. Griffin (DuPont); Ladies' Entertainment, Lyle L. Longworth (Monsanto). Advisors included J. C. Walton (Boston Woven Hose), T. M. Knowland (Boston Woven Hose), and John T. Blake (Simplex Wire).

Develops Perfumed Rubber

Pharmacist Albert Rubinson has developed a method of impregnating rubber with a given scent to provide an aroma lasting for an indeterminate period of time. Mr. Rubinson has formed a company, known as the "Perfume-O-Tones Co." at 4223 Church Ave. in Brooklyn, N. Y., for the scenting of rubber, paper and fabric articles. The first and last pages of a recent issue of "Life" magazine were perfumed by Mr. Rubinson's process.

Conidendrin-Derived Stabilizers

Two new antioxidants, alpha- and beta conidendrol, polyphenolic compounds derived from conidendrin, a substance occurring in many coniferous woods, have been compared with accepted stabilizers in a variety of products by chemists of the Bureau of Agricultural and Industrial Chemistry, U. S. Department of Agriculture. Members of the Oilseed Division of the Southern Regional Research Laboratory in New Orleans, La., tested the conidendrols as inhibitors of oxidative rancidity in cottonseed and peanut oils, in lard, and in fat-containing candies, as stabilizers of synthetic rubber against aging and hardening, and as inhibitors of polymerization of certain vinyl-type monomers. They found that the conidendrols performed as well as or better than a number of the accepted stabilizers, including some marketed at higher prices than would be the conidendrols. Since conidendrin, the parent material, is plentiful as a waste product during the pulping of western hemlock —an estimated 10 to 15 pounds can be recovered from the pulping of 1 ton—the derivatives would be of interest as potential replacements or supplements for stabilizers obtained from coal tar (benzene or naphthalene) if these become scarce.

WHO MAKES IT?

Among inquiries received in recent weeks were those for the following items:

(1) Rubber checkers.

(2) Solid rubber balls, ¼-inch in diameter.

If suppliers of the above items will communicate with us we will put them in touch with the original inquirers.

EDITOR

C.I.C. RUBBER CHEMISTRY GROUP HOLDS EIGHTH ANNUAL MEETING

The Rubber Chemistry Division of the Chemical Institute of Canada held its 8th Annual Meeting in Windsor, Ontario, Canada, on Friday, June 5. The meeting featured the presentation of eight technical papers, election of new officers, a divisional banquet, and special tours of the plants of the Polymer Corporation and the Cabot Carbon Co. of Canada, Ltd., both located at Sarnia. Special buses were provided for the trip from Windsor to Sarnia, and after the tours a buffet luncheon was served.

Attendance at the technical sessions in Windsor, which were held at Assumption College, amounted to approximately 100 members and guests at each session. The eight papers presented, abstracts of which appeared in our previous issue, were as follows:

"Rubber Cements," by F. H. Jankowski, Minnesota Mining & Manufacturing Co. of Canada, Ltd., London, Ontario.

"The Impact of Man-Made Fibers on the Rubber Industry," by J. W. Illingworth, Dunlop Rubber Co., Ltd., Birmingham, England.

"Versalite—A Typical Thermoplastic Rubber-Resin Composition," by O. R. Huggenberger, Dominion Rubber Co., Ltd., Montreal.

"Properties and Performance of Super-Abrasion Furnace Blacks," by F. H. Amon and H. J. Collyer, Godfrey L. Cabon, Inc., Boston, Mass.

"Theoretical Approach to the Design of Rubber-Oil-Black Masterbatch," by S. C. Einhorn and L. A. McLeod, Polymer Corp., Ltd., Sarnia, Ontario.

"Rubber as It is Used in the Modern Automobile," by J. C. Macdonald, Chrysler Corp. of Canada, Ltd., Windsor, Ontario.

"Blends of Rubbers and Resins," by R. C. Bascom, B. F. Goodrich Chemical Co., Cleveland, Ohio.

"Chemigum SL—The New Goodyear Polyester Rubber," by N. V. Seeger, Goodyear Tire & Rubber Co., Akron, Ohio.

New Officers for 1953-54

The business meeting of the Division was held at the end of the first technical session, with Tom Davies (Polymer Corp.), retiring chairman of the Division, presiding. A slate of new officers for the 1953-54 season was presented by Norman Smith (Dominion Rubber), chairman of the Nominating Committee, and all nominees were unanimously elected, as follows: *Chairman*, G. D. Stevens, (Canadian Goodyear); *Vice-Chairman*, E. Bolton (Canadian Goodrich); *Secretary-Treasurer*, F. R. Gorrie (Cabot Carbon of Canada). The following were elected as members of the Executive Committee: G. J. Baxter (Canadian Firestone), H. K. Cunliffe (Dominion Rubber), and W. Gedye (Canadian Monsanto).

During the business meeting Mr. Davies stated that a recent survey indicated that approximately 200 C.I.C. members had stated an interest in the Rubber Chemistry Division and that a check of these people showed only approximately 75% of them were actually members of the rubber industry. He urged that a definite drive for additional membership be made in the forthcoming season.

Mr. Davies also revealed that the Executive Committee had been giving some thought to holding a Fall Symposium each year in addition to the Annual Meeting and urged that such a secondary meeting be held, starting some time in the near future. He also stated that some discussion had been held with the A.C.S. Rubber Division with regard to a joint meeting, and that it was possible such a joint meeting might be held in Canada in 1956 or 1957.

Cadwell Is Banquet Speaker

Over 100 members and guests attended the divisional banquet, which was held in the ballroom of the Prince Edward Hotel on Friday evening. After toasts to the Queen and the President of the United States, an excellent dinner was served. After the dinner, Mr. Davies introduced R. A. Kundinger, of the Dominion Rubber Co., who, in turn, introduced Dr. S. M. Cadwell, director of development of the U. S. Rubber Co., the main speaker.

In his address, devoted to "The Future Role of the Rubber Chemist," Dr. Cadwell reviewed some of the relatively simple problems of the rubber chemist some 40 years ago and then discussed some of the far more complex problems of today's rubber chemist. Today's rubber chemist, he said, is expected to have not only a firm grasp of rubber technology, but an equal understanding of chemistry in general, since the rubber industry is spilling over into the Chemical field.

Dr. Cadwell, in proving his point, stated that the over-all chemical business in 1950 amounted to some $8,000,000,000, of which high polymers, in one form or another, accounted for approximately $2,400,000,000, or more than 25%. He stressed the fact that the rubber industry frequently contributes to other industries, pointing out that Captax, for example, is being used as a flotation agent and the dithiocarbamates as fungicides.

In concluding, Dr. Cadwell stated that the young rubber chemist of today has almost unlimited possibilities in the combined rubber-plastic-chemical field since he has a much broader horizon than did his counterpart of yesterday.

Rowzee Named Institute Officer

Other activities at the Windsor meeting of interest to the rubber field included the election of E. R. Rowzee, vice-president and general manager of the Polymer Corp., as vice-president of the Chemical Institute of Canada. Mr. Rowzee, who was associated with the Goodyear Tire & Rubber Co. from 1935 to 1944, holds a master's degree in chemical engineering from M.I.T. E. A. Crockett, chief chemist of the Polymer Corp., was elected as a councillor.

Seventeen prominent Canadian chemists and chemical engineers were elected to Fellowship in the Institute during the meeting, including Dr. T. H. Evans, research chemist of the Dominion Rubber Research Laboratories at Guelph and C. W. Gates, development manager of Naugatuck Chemical at Elmira.

New Collapsible Air Mattress

Members of the United Nations armed forces who sustain injuries in combat engagements of the future will be made more comfortable while undergoing treatment in forward areas by resting on inflated mattresses, manufactured of rubberized fabric by the Goodyear Tire & Rubber Co. This new product, designed by the Army Quartermaster Corps in cooperation with industry to meet the armed forces' need for a comfortable, lightweight, collapsible mattress for use primarily in sectors just behind the front lines, actually consists of two separate air chambers, joined together in a manner resembling a double-decker sandwich. Material used in the "air mat" construction of the mattress is nylon fabric, coated with neoprene. Each of the three layers of this material is separated from the other by dropped pile threads, which serve as control spacers and prevent the unit from assuming the shape of a sphere when it is inflated. One of the outer layers of rubberized fabric is separated from the center layer by one-inch drop threads, and the other outer layer is set off by two-inch threads. The layers are laminated to form a three-inch thickness. Each of the two sections must be inflated separately, for which purpose a valve is inserted in both the top and bottom layers. Oral inflation normally produces sufficient air pressure for proper inflation of the mattress. When inflated, the mattress covers a ground area of 74 x 30 inches. The two separate layers of air provide good thermal protection and prevent heat losses into cold ground. Featheredge seams permit the mattress to lie flat when deflated. In this form it may be folded into a bundle small enough to be carried easily under the arm.

Polyco 505 Polyvinyl Emulsion

A new water-resistant polyvinyl acetate emulsion for adhesives and paints, "Polyco 505," has been introduced by the American Polymer Corp., Peabody, Mass. This product is said to provide a unique vehicle for the formulation of paint primers, concrete paints, and water-resistant adhesives. Specifications are as follows: solids, 55%; pH, 4.0 to 4.5; particle size microns, 0.5 to 1; free monomer, 0.3% maximum; viscosity, 1500-2000 cps; water-resistance, excellent; heat stability of film at 250° F., no discoloration in 1 hour; mechanical stability, excellent; settling rate, excellent; emulsion type, nonionic.

"Vinyl-Grip" Adhesive

Adhesive Products Corp., New York, N. Y., has announced the development of a new adhesive, "Vinyl-Grip". The product was primarily developed for adhering saran and mohair wigs to vinyl doll heads. Vinyl-Grip is said to bite into the surface of the plastic instead of laying on top as is the case with most adhesives. The product also adheres well to slush-molded vinyl objects. Transparent and completely waterproof, Vinyl-Grip is economical to use because it spreads easily, dries rapidly, does not string and does not run, the company claims.

BAKELITE ANNOUNCES COMPLETION OF POLYETHYLENE EXPANSION PLAN

Completion of plans for the largest single expansion program in the entire history of the plastics industry was announced by the Bakelite Co., a division of the Union Carbide and Carbon Corp., in a special program on May 6. Activities for the day included a visit to the Bakelite plant at Bound Brook, N. J., a tour of the development laboratories featuring polyethylene fabrication and valuation tests, an exhibit of applications at Far Hills Inn in Far Hills, N. J., luncheon, and a series of field demonstrations. Featured speakers for the day were H. S. Bunn, president of the company, and Earl D. Johnson, Undersecretary of the Army.

Mr. Bunn pointed out that the expansion program, when completed in 1955, will double present U. S. polyethylene production, bringing total annual production of Bakelite polyethylene to over 250,000,000 pounds. Each plant, he said, is strategically located near major gas supplies in Texas and California, since these plants depend solely on gas for their chemical raw materials.

The new plants are designed specifically as complete units for processing gas to yield polyethylene plastic and other valuable chemicals. Each plant has a rated annual capacity of 60,000,000 pounds or more of polyethylene, and each is being built and operated by the Carbide and Carbon Chemical Co., also a division of Union Carbide. Bakelite will continue to handle sales of the expanded production, according to Mr. Bunn.

The Bakelite president said the three new plants are planned to begin operation separately with this projected schedule: The first will begin operation at Texas City, Texas, about August of this year; by mid-1954, the Seadrift, Texas, plant will be open; and by early 1955, the Torrance, Calif., plant is expected to begin production.

Interesting Field Demonstrations

Of particular interest were the field demonstrations held at Far Hills. Among the items shown here were "pillow balloons," made of polyethylene film, which are used by the Crusade for Freedom to carry messages behind the Iron Curtain. Giant skyhook balloons used by the U. S. Navy for upper air weather research were also demonstrated.

Also to be seen was new, lightweight, low-cost pipe for farm water systems and radiant heating panels, both made of Bakelite polyethylene. Flexible pipe for a wide variety of uses in the natural gas, electric power transmission, sluice and coal mining, building construction, chemical and other industries, was also on exhibit at Far Hills.

A new type of aerial tow target adopted by the U. S. Navy and the Air Force was exhibited. The tow target is woven of Bakelite polyethylene monofilaments .019 to .023 inches in diameter. It is about 30 feet long and six feet high.

Among other items shown at the Far Hills demonstrations were industrial acid carboys, U. S. Army assault telephone wire insulation, Signal Corps carrier cable, and a new cartridge liner for U. S. Army recoilless rifles.

In his address at the Bakelite plant in Bound Brook, the Undersecretary of the Army paid tribute to the cooperation between industry and the armed forces in producing many items of equipment. Many of the polyethylene products on exhibit were developed for military use by just such cooperation. This close liaison between the military establishment and industry, he pointed out, has resulted in a savings of many dollars to the government.

Speaking for the U. S. Navy at the event was Captain William M. Pryor, Jr., assistant chief of Research and Development for the Bureau of Ships. Captain Pryor spoke of the increasing uses being found for polyethylene in the Navy, including its use for packaging frozen food and dry batteries, in water tanks, in electronics, gas and water transmission, etc. He noted that polyethylene, besides its great commercial potentialities, has possibilities for increasing application in the Navy.

GOODYEAR CHEMICAL DIVISION NAMES TWO NEW SPECIAL REPRESENTATIVES

William E. Kelly

John D. Hunter

The Chemical Division of the Goodyear Tire & Rubber Co. has announced the appointment of William E. Kelly and John D. Hunter as special representatives to the division's New York district and midwest district in Chicago, Ill. Mr. Kelly, who has had extensive experience in chemicals in the rubber, adhesive and textile fields, will handle Chemigum rubbers and latices and Pliolite reinforcing resins to increase service in the New York area. He holds degrees in chemistry from Hofstra College and Lehigh University. Mr. Hunter, who will specialize in Pliolite resins and latices for the paint industry in the Chemical Division's midwest district, has a long background in research and development work on coatings and impregnants. He is a graduate of Notre Dame University.

BWH Lightweight Garden Hose

A new lightweight garden hose of pure vinyl plastic has been announced by the Boston Woven Hose & Rubber Co., Boston, Mass. Known as "Boston Kleerite," the transparent green hose features longer wearing qualities while kinking has been virtually eliminated, the company states. Flexible and easy to handle, the new hose is easily stored. It comes in 25, 50 and 75-foot lengths.

"Hi-Way Hauler" Truck Tire

A new "Hi-Way Hauler" truck tire, constructed with a "spread bead" principle designed to give more original miles and more recap miles, has been introduced by the Hood Rubber Co., a division of the B. F. Goodrich Co. The new tire is said to have delivered up to 25% more mileage in actual road tests against leading competitive brands of highway truck tires. The Hood truck tire is molded with beads closer together so that when the tire is mounted, inflation spreads the beads to the full width of the rim. This flattens the tread, puts more rubber on the road, and gives better load distribution, the company states. As the tread is flattened, the tread rubber becomes more compressed, giving it greater resistance to friction, abrasion and growth. The spread bead construction permits a new type of shoulder design that enables the tire to rid itself of excessive heat, chief cause of premature failures from ply separation. The center rib of the Hi-Way Hauler is wider than the other four, giving better distribution of the tread rubber by putting more rubber where the greatest wear occurs. Other features include a free-rolling rib design, tie bars across tread grooves that tie the ribs together to stabilize them as the tire rotates. The dual tread construction of the tire is also said to give maximum performance. The top tread of the tire is compounded for long mileage, while the under tread is compounded to cushion the tire against road impacts. The tire is currently available in three sizes ranging from 7.00-17 8 ply to 9.00-20 12 ply.

DU PONT EXPLAINS ACQUISITION OF U. S. RUBBER STOCK AT TRIAL

Irenee du Pont, testifying on May 4 at the anti-trust trial of E. I. du Pont de Nemours & Co., Inc., being held in Federal District Court in Chicago, Ill., stated that purchase of U. S. Rubber Co. stock by a syndicate including many members of the du Pont family in 1927 was motivated by a desire to get the ear of the management and help the company out of a bad financial condition.

Mr. du Pont testified that his own interest in the rubber company began in 1913. He put some money into U. S. Rubber stock after a fraternity brother invented a process and sold it to that company, he said. Fourteen years later it became apparent that something was wrong at the tire concern, he stated. The stock dropped sharply on Wall Street while shares of competitors were rising in value. The balance sheet of the company showed that accounts receivable were too large and inventories were "very excessive."

The syndicate began to buy the stock when it was low. The purpose of the market operation was to acquire enough shares so that the U. S. Rubber management would listen to advice to be offered by the buyers on managing the company's finances, declared Mr. du Pont. With financial practices improved, the company could be expected to pull out of its slump and the syndicate thus would profit on its investment, he added.

Mr. du Pont said the buying group was organized by a brother-in-law, Winder Laird, who was a broker in Wilmington, Del. It was only an accident that the syndicate included so many relatives, he said.

On May 18, Sir William Wiseman, British-born partner in the New York City investment firm of Kuhn, Loeb & Co., and a director of U. S. Rubber was questioned. His testimony concerned influences the investment firm had on the management and actions of the rubber company, for which it had offered several security issues since 1917.

Earlier, the dispute had moved into new field with the government's request for a subpoena which would require General Motors Corp., a co-defendant, to make available for government use its records of purchase from DuPont and other paint and fabric suppliers.

Litzler Forms New Company

C. A. Litzler, who recently resigned as president of Industrial Ovens, Inc. of Cleveland, Ohio, has formed his own consulting firm under the name of C. A. Litzler Co., Inc., with headquarters at 11621 Detroit Ave., Cleveland 2, Ohio. The new firm is specializing in technical assistance to tire manufacturers regarding the latest methods of processing the newer synthetic materials for tire fabrics. A recognized authority on controlled high tension handling of continuous materials, Mr. Litzler recently left the United States for a four week visit to the continent for a series of conferences with leading European tire producers. He is expected to return to the United States about July 1.

Brubaker Promoted By Witco

Harry M. Brubaker

Harry M. Brubaker, formerly assistant sales manager of the Carbon Black Division of the Witco Chemical Co., has been promoted to sales manager of the division, with headquarters in Akron, Ohio. Associated with Witco for approximately two years, Mr. Brubaker has been active in the carbon black industry for a number of years. Before joining Witco, he was associated with the B. F. Goodrich Co. Mr. Brubaker is treasurer of the Akron Rubber Group, a director of the Southern Ohio Rubber Group, and a member of the Division of Rubber Chemistry of the American Chemical Society.

ACS Monographs in Microtext

Of the 120 A.C.S. Monographs published by the Reinhold Publishing Corp. since 1921 quite a large number are out-of-print and, at the present time, their reprinting is not contemplated. Arrangements have been made, however, with the Microtext Publishing Corp., 112 Liberty St., New York 6, N. Y., to issue these out-of-print monographs in card form. Forty-eight to seventy pages of the original book can be produced on one 3 by 5 Microtext card. These cards are read by placing them in a reading device which enlarges each miniaturized page back to its original size. A complete listing of these out-of-print monographs, prices and other information can be obtained from the Microtext company.

Consolidates Chicago Facilities

Witco Chemical Co. has announced the consolidation of its offices in Chicago, Ill., into one building. Housing the executive and administrative departments, the new offices are contained in a two-story building attached to a new warehouse which replaces the one burned down in June, 1952. The new warehouse was recently completed and provides 25,000 square feet of space. Built at a cost of $150,000, the new warehouse is completely equipped with a sprinkler system to guard against a recurrence of last year's fire.

PHILADELPHIA HEARS GARVEY ON ACCELERATOR COMPOUNDING

The Philadelphia Rubber Group held its Spring Meeting on May 1, 1953, at the Poor Richard Club in Philadelphia, Penna., with approximately 130 members and guests in attendance. The speaker for the evening was Dr. B. S. Garvey, Jr., of Sharples Chemicals Inc., who delivered a paper on "Accelerator Compounding—Heat History and Compounding," which he had prepared in conjunction with D. W. Yochum and C. A. Morschauser of the company.

In his paper, Dr. Garvey discussed certain phases of compounding which are related to scorch time and cure time. In this work scorch time was measured by the Mooney machine, on the basis of press cures, and on the basis of mixing on a hot mill. Cure time was measured on the Mooney machine and on the basis of press cure. Evidence was presented to support the following thesis: both maximum scorch time and vulcanization time are characteristics of a compound and are dependent primarily on the accelerator but also to some extent on the sulfur ratio, pigments, etc.

The maximum scorch time may be partly or completely used up by the heat history of processing (measured here by time on a hot mill) so that for different batches the residual scorch time is variable and depends on heat history. The vulcanization time, on the other hand, is constant and is independent of the residual scorch time of the particular batch, the speaker said.

Since cure time is the sum of the constant vulcanization time and the variable scorch time, it also varies with the heat history of the batch. This may explain many apparently mysterious variations in factory cures. Different accelerators vary in maximum scorch time, in vulcanization time, and in the ratio of the two. If processing heat history can be adequately controlled it is possible to process stocks at curing temperatures or even at higher ones, Dr. Garvey concluded.

Skelton Opens Akron Office

S. S. Skelton Co., Cleveland, Ohio, has opened a new office at 68 East Mill St. in Akron, Ohio. The telephone number is Blackstone 2211. The new office will be under the management of T. E. Cook, formerly associated with the Firestone Tire & Rubber Co. Mr. Cook's sales responsibilities will include the major rubber companies in Akron as well as the paint, chemical and rubber trade in the central and western part of Ohio.

Northern Calif. Hears Martin

Dr. S. M. Martin, Jr., vice-president and sales manager of the Thiokol Corp., Trenton, N. J., addressed the May 14th meeting of the Northern California Rubber Group which was held at the Elk's Club in Berkeley, Calif. Dr. Martin spoke on "Thiokol Synthetic Rubbers—Their Places in the Rubber Industry." The speaker discussed the industrial acceptance of Thiokol and the many new uses of the product.

WYANDOTTE CHEMICALS OPENS NEW RESEARCH LABORATORIES

Wyandotte Chemicals Corp. opened its new Research Center in Wyandotte, Mich., early in June with a specially conducted tour of the installation for members of the industry and the press. Robert B. Semple, president of the corporation, said the new center will contribute further to Wyandotte's rising importance in research and development activities.

The new Research Center permits a consolidation of the company's many research and development activities and will enable the company to materially expand not only its long-range research within the organic and inorganic chemical fields, but special research projects assumed by the company on behalf of the national defense program. The Research Laboratories of the Center are said to embody a new concept of industrial laboratory design and construction. This includes laboratories with movable walls and built-in services that make them as flexible as movie sets.

The Rubber Laboratories constitute an important sector of the Research Center's Inorganic Research Department. Major objectives of the Rubber Laboratory are the evaluation and testing of experimental products from Wyandotte's other research groups for possible application as rubber chemicals. The laboratory will also develop new rubber formulations with specific properties in response to customer requests.

The laboratories are equipped with two-roll rubber mills, a Banbury mixer, curing presses, a rubber extruder for extrusion tests and wire insulation studies, a plastics extruder, Scott tensile testers, DeMattia and Ross flexometers, a Bureau of Standards abrader, and a wide variety of other instruments for testing the physical properties of rubber compounds according to A.S.T.M. procedures.

Also included in the Research Center are special areas devoted to exploration in such fields as radioactive tracers, nucleonics, electronics, organic and inorganic chemistry, sanitation and germicides, electroplating, physics, and the entire field of commercial cleaning served by the firm.

The new laboratories cover about one city block and are of modern two-story brick construction with a full basement laid out roughly in a T-shape. The laboratories, together with a pilot plant, high pressure laboratory, and other facilities, comprise the Research Center. Adequate provision has been made for future expansion.

Mr. Semple, in a special statement, said that "in recent years, the achievements of our research staff have contributed materially to the progress of our company and have been reflected in the stabilization of employment . . . as well as in the creation of hundreds of new jobs not only in our operations but in plants of users.

"We hope that as a result of the work done here at our new Research Center, and the production from new and expanded plants and equipment, our business will keep pace with the dynamic chemical industry in the years ahead."

(EDITOR'S NOTE: A picture story of the new Wyandotte Rubber Laboratories will appear in an early issue of RUBBER AGE.)

Baker Estanox Materials

Baker Castor Oil Co., New York, N. Y., has introduced two new materials which find use as primary plasticizers for synthetic rubbers. The company uses a modification of the peracetic process for the hydroxylation of fats in the production of the products, "Estanox 203" (butyl hydroxy-acetoxy ester) and "Estanox 206" (butyl poly-acetoxy ester). Estanox 203 has the following properties: Gardner color, 5; specific gravity @ 25° C./25° C., 0.956; viscosity, G.H. @ 25° C., B+; acid value, 4; saponification value, 207; iodine value, 24; and hydroxyl value, 155. Estanox 206 has the following properties: Gardner color, 10; specific gravity, 0.973; viscosity, B+; acid value, 3; saponification value, 342; iodine value, 21; and hydroxyl value, 10. Estanox 206 is said to be a highly efficient, low cost secondary plasticizer for vinyl resins, with Estanox 203 only slightly less so. It is theorized that Estanox 203 may be considered a stabilizing plasticizer for vinyl resins because of its epoxy content. Both esters are primary plasticizers for cellulosic resins as well as synthetic rubbers. Baker has already started semi-commercial production on a second group of derivatives, a series of synthetic hydroxystearic acids. Dihydroxystearic and polyhydroxystearic acids are being offered.

New U. S. Rubber Fellowship

U. S. Rubber Co. has awarded $3500 to the Management Training Program at Radcliffe College, Cambridge, Mass., to be used for one fellowship of $700 each year for the next five years. The company has previously cooperated with the Management Training Program, a one-year graduate course in personnel and business administration. The company has for over a decade placed Management Training Program students in unskilled and supervisory positions for field work assignments, which are a part of the regular academic schedule. Graduates of the program also have filled permanent positions with the company. In addition, U. S. Rubber has granted one-year fellowships of $700 for the past two years.

Goodyear Shows Flooring Line

An advance look at new corrugated rubber matting and new residential gauge rubber flooring to be marketed by the Goodyear Tire & Rubber Cmpany's flooring outlets was given the company's district managers and flooring sales representatives from all sections of the country at a recent annual conference and "refresher" clinic, held in Akron. Latest developments in Goodyear's vinyl flooring lines also were presented to the group during the four-day meeting. The program included trips to vinyl and rubber production departments, sessions in the company's research and development laboratories, and conferences at the Mayflower Hotel. The new corrugated rubber matting displayed at the meeting was described as one of the highest quality corrugated rubber runners manufactured. Of one-eighth inch gauge, it is made in two colors—black and maroon—and in four widths; 24 inches, 36 inches, 48 inches and 72 inches. For the convenience of customers, the matting can be supplied either in full rolls of 50 linear yards each, or in half-rolls of 25 yards each. New designs, new quality and seven new styles are featured in the new residential gauge rubber, designed to meet the demands of the residential market for rubber flooring both for self-installation and for installation by dealers, with emphasis on the self-installation appeal.

"Rub-Lub" Rubber Lubricant

Permatex Co., Inc., Brooklyn, N. Y., has developed a new stainless and greaseless rubber lubricant called "Rub-Lub". The lubricant is applied with a sponge applicator to such rubber automobile parts as window sealing strips, door and hood bumpers and seals, bumper and gas tank grommets, rear deck seals, windshield channels, hoses and wipers, fender guards, and other rubber parts and components which can be easily and quickly reached. Regular use of Rub-Lub tends to prevent oxidation, stems the effects of oil, grease, sun, heat and friction and prolongs the efficient service life of the parts, the company states.

Shown above is an over-all view of the new Research Center recently opened by the Wyandotte Chemicals Corp. in Wyandotte, Mich. The Research Center includes complete facilities for the evaluation and testing of rubber products and chemicals.

INTERNATIONAL RUBBER STUDY GROUP HOLDS CONFERENCE IN COPENHAGEN

The recently concluded meeting of the International Rubber Study Group at Copenhagen, Denmark, evoked a world-wide response. The imminent sale of the government-owned synthetic rubber plants in the United States lent added interest to this conference. There follows below a full report on the conference as submitted by the Rubber Study Group, and a statement issued by the United States manufacturing industry representatives who attended the meeting. The tabular matter represents estimates of production and consumption compiled by the Rubber Study Group.

The Tenth Meeting of the International Rubber Study Group held in Copenhagen under the chairmanship of H. T. Karsten, head of the Danish Delegation, ended on May 15, 1953. The vice-chairmen were Y. Suzuki, head of the Japanese delegation, and Nguyen-Van-Ty, head of the delegation of Viêt-Nam.

The meeting was attended by delegations of Australia, Belgium, British Colonial and Dependent Territories, Burma, Cambodia, Canada, Ceylon, Denmark, Federal Republic of Germany, France, Hungary, Indonesia, Italy, Japan, Liberia, Netherlands, Thailand, United Kingdom, United States of America and Viêt-Nam, and by observers from the Food and Agriculture Organization, the Organization for European Economic Co-operation and the International Rubber Development Committee.

World Statistical Position

The group examined the world statistical position and made estimates for natural and synthetic rubber production and consumption during 1953. It was estimated that the world production of natural rubber would be around 1,788,000 long tons, while production of synthetic rubber in member countries would be around 989,000 long tons. In regard to consumption, it was estimated that the world might consume, i.e. turn into manufactured goods, 1,595,000 long tons of natural rubber and approximately 909,000 long tons of synthetic rubber, apart from the synthetic rubber produced in non-member countries. The balance of estimated production over estimated consumption of both natural and synthetic rubber will be available for absorption into governmental and commercial stocks. Tables of estimates made by the group appear elsewhere on these pages.

The group, as at previous meetings, examined various aspects relating to the expansion of world consumption of rubber.

SYNTHETIC RUBBER PRODUCTION
Estimated for 1953
(in 1,000 long tons)

Territory	
U. S. A.	905(a)
Canada	79(a)
Germany	5
Total	989

(a) Including the oil content of oil-extended GR-S.

The group considered that the use of rubber in roads was one of the most important potential outlets for rubber, but that its full development was a matter for further intensive study and promotional effort. The group also agreed that recent developments in the adoption of latex foam for upholstery and its firm establishment in popularity encouraged the view that this was probably the most immediate new avenue for the consumption of large quantities of rubber but that the selling price of liquid latex was an important competitive factor.

The group again examined a number of problems relating to the packing, shipping and marketing of natural rubber and in particular problems relating to type samples were again discussed. The group noted that this meeting of the Packing and Marketing Committee had produced a greater degree of agreement on rubber type samples than had been reached between representatives of terminal and primary rubber markets on previous occasions. The group welcomed the joint proprosal of the Rubber Manufacturers' Assoiciation and Rubber Trade Association of New York that a meeting should be held between consumers, producers, packers, and shippers in order to discuss packing specifications and other matters of mutual interest.

The group also reviewed the development in the supply of technically classified natural rubber and noted that some 25,000 tons had been provided in 1952. Problems associated with this development were examined, particularly in regard to the elimination of dirt.

In dealing with the report of their Working Party on a buffer-stock scheme the group agreed on the following conclusions: "The International Rubber Study Group, having considered whether measures designed to prevent burdensome surpluses and serious shortages of rubber are necessary, found that a difference of opinion existed. The majority of countries producing natural rubber, including all main producing countries, and some consuming countries considered such measures necessary and practicable, whereas other countries either were not convinced of the present necessity of such a scheme or were not yet in a position to decide upon their attitude. The group also noted that certain governments had not yet been able to formulate their views on the points outstanding in the draft buffer-stock agreements. Consequently the group felt that it could not recommend at this stage that the Secretary General of the United Nations should be asked to summon an international commodity conference.

In the circumstances the group instructed the Management Committee to hold a special meeting in September or October of this year for the purposes of: (a) reviewing the facts of the rubber situation as they might then be; (b) securing accord on the outstanding points in the draft buffer-stock agreement; (c) examining whether any agreed view between member countries appeared possible with regard to the necessity for such an agreement.

NATURAL RUBBER PRODUCTION
Estimated for 1953
(in 1,000 long tons)

Territory	
Malaya	590
Indonesia	740
Ceylon	96
Viet-Nam & Cambodia	69
Thailand	100
British Borneo	50
Burma	10
Liberia	37
British Africa	20
Belgian Africa	20
French Africa	3
Other Countries	53
Total	1,788

Due notice of this meeting would be given by the Management Committee to all member countries and each member would be entitled to participate in this special meeting if it so desired.

The findings of this special meeting would be circulated to all member goernments for comment and for expression of their views as to whether the Secretary General of the United Nations should be asked to call a commodity conference. In the light of the findings of the special meeting and of the comments and views expressed by member governments, the Management Committee would decide to request the Secretary General of the United Nations to call a commodity conference or, if not, what other action should be taken."

British Colonial and Dependent Territories, Cambodia, Canada, Ceylon, Denmark, France, Indonesia, Netherlands, the United Kingdom and the United States of America will be members of the Management Committee for the coming year. The group accepted the invitation of the Ceylon Government to hold its next annual meeting in Ceylon at a date to be decided later.

U. S. Industry Comments

United States of America rubber products manufacturers believe that there can be no surplus of natural rubber during the next twelve months. During the 4½ months of 1953 already passed, every pound of natural rubber offered in the world markets has been sold, either for consumption or for government stockpiles.

The current competitive situation between natural rubber and GR-S in the United States is such that there is every reason to believe that, during the next twelve months, the United States rubber-consuming industry will buy every pound of natural rubber available to them at prices competitive with GR-S.

The recent action of the natural rubber market suggests that, at prevailing prices, an increasing preference for all grades of natural rubber is developing. The estimates of the Statistical Committee for 1953 show the expectation of the United States rubber-consuming industry that, through increasing use of natural

rubber, the percentage usage of natural rubber in the United States during the last half of the year will be well above 40 percent. Even a relatively slight decline from presently prevailing prices may be expected to provide an incentive to a substantial increase in the usage of natural rubber in the United States.

United States rubber consumers view the tonnage of natural rubber in excess of the calculated 40 percent usage as an opportunity for further increase in consumption, rather than as a surplus.

If prices of natural rubber decline, rubber consumers increase the volume of their purchases for economic reasons, and normal market forces operate to set an effective floor price for natural rubber.

In summary, we believe that normal market forces will ensure a market during the next twelve months for all of the natural rubber which will be produced and at prices which will not be substantially lower than present prices. We understand that natural rubber producers have no concern regarding competition from synthetic rubber, once the plants are transferred to private ownership.

ESTIMATED NATURAL AND SYNTHETIC RUBBER CONSUMPTION IN 1953

(in 1,000 long tons)

Territory	*Natural*	*Synthetic**	*Total*
U. S. A.	575	824 (c)	1,399
U. K.	201	5½	206½
Belgium	15	2	17
Denmark	5	(b)	5
France	110	12	122
Federal Republic of Germany	97½	11	108½
Italy	40	8	48
Netherlands	15	¼	15½
Australia	30	(b)	30
Canada	35	37	72
Japan	66	1	67
Other Countries	405	8	413
Total	1,595	909	2,504

* Excluding Russian produced synthetic rubber.
(b) A small amount of synthetic rubber is expected to be used.
(c) Including the oil content of oil-extended types.

Intercontinental Studies Merger

Intercontinental Rubber Co. of New York, N. Y., has sent a letter to its stockholders advising them that directors are considering a merger with Texas Instruments, Inc., of Dallas, Texas. The next regular board meeting of Intercontinental is scheduled for June 25, but a spokesman for the company indicated that a special meeting may be called before then. Intercontinental Rubber was formerly engaged in the production of guayule rubber. For the past few years, it has been seeking new fields in which its resources might be employed profitably. Texas Instruments and its subsidiaries are engaged in producing electronic instruments and in providing seismic oil exploration services. Intercontinental Rubber stated that the merged company would be owned 80% by stockholders of Texas Instruments and 20% by stockholders of Intercontinental Rubber. Under present plans, holders of Intercontinental Rubber stock would exchange their shares on a share-for-share basis of the merged company's stock. There are 595,832 shares of Intercontinental Rubber stock outstanding.

Movie on Futures Market

Merrill Lynch, Pierce, Fenner and Beane, nation-wide investment firm, has released a new movie on the commodity futures market. Entitled "Marketplace, U.S.A.", the 30 minute film explains just what commodity futures are and how they serve the nation. Demonstrating the importance of futures markets and their economic function, the film points out how consumers are able to get lower prices, farmers more for their crops and manufacturers and processors can insure against price risks through "hedging" on futures exchanges. Merrill Lynch plans to show the film as widely as possible throughout the country. Showings will be arranged through all of the brokerage firm's 111 offices.

B. F. Goodrich Sues Firestone

B. F. Goodrich Co. filed suit against the Firestone Tire & Rubber Co. in Federal District Court in Cleveland, Ohio, on May 11, charging Firestone with infringing Goodrich patents in the manufacture and sale of tubeless tires for motor vehicles and aircraft. Firestone issued a statement immediately after the filing in which it said the suit lacked merit. "Firestone tubeless tires do not infringe on any Goodrich patents and we expect to demonstrate that fact to the complete satisfaction of the courts," the statement said. "Tubeless tires have been known not only in the United States but in other countries for many years and pretensions by Goodrich that it originated the idea of a tubeless tire are groundless. Firestone has pursued its own developments in this field without appropriating anything for which any other company has received patents. The Firestone tubeless tire has a number of features which are unique to Firestone. Firestone has not adapted the Goodrich tubeless tire construction as Firestone believes that its own constructions are superior." Goodrich asked in the suit that Firestone be enjoined against what it called "further infringements" and asked also for damages. Goodrich announced its tubeless tire in 1947 and more than 2,000,000 units since have been sold, it said. Firestone's statement said that the latest suit was the third in which it "has had a burden of defending itself against a series of patents which have no merit."

Publishing "Silastic" Newsletter

Dow Corning Corp., Midland, Mich., has begun the publication of the "Silastic Newsletter," a new technical report. Volume I, Number 1 of the new publication, March-April, 1953, discusses the qualifications of Silastic for AMS and SAE-ASTM qualifications. Also discussed are Silastic seals for hydraulic fluids, the coloring of Silastic, its resistance to fungi, water absorption and uses for Silastic coated cloth. Copies of the newsletter may be secured from the company.

Elected President of Hercules

Albert E. Forster has been elected president of the Hercules Powder Co., Wilmington, Del., succeeding C. A. Higgins, who will continue as chairman of the board, a position to which he was elected in 1944. Mr. Forster, who served as vice-president and a member of the Executive Committee since 1951, was also named chairman of the Executive Committee. Following the company's retirement policy, Mr. Higgins resigned as president and as chairman of the Executive Committee. Mr. Forster joined Hercules in 1925 as a technical service representative, and left the firm in 1930 for engineering practice in Brazil. In 1934, he rejoined the firm as a member of the Explosives Department and became successively assistant superintendent of the Carthage, Mo., explosive plant, assistant manager of the Birmingham, Ala., sales office, and manager of the Service Division in Wilmington. In 1940, he became assistant manager of the Explosive Department. Later in 1940, Mr. Forster was transferred to the Naval Stores Department as assistant manager, and a month later became general manager of that department. Mr. Forster was born in Mexico, his parent's temporary residence at a time when his father, a railroad engineering executive, was engaged in the construction of a Mexican railroad. He was graduated from Stanford University with a B. A. degree in geology and subsequently obtained an engineer of mines degree in mining engineering.

Allen Industries Elects Tobias

J. J. Tobias, formerly vice-president and general manager of Allen Industries, Inc., Detroit, Mich., has been elected president of the company succeeding Sidney J. Allen, who has been elected chairman of the board. In other appointments, Harold C. Allen became executive vice-president and assistant to the president, while David T. Lipton was named vice-president in charge of rug cushion sales. Donald Suhr was named vice-president in charge of manufacturing operations.

Appointed Bakelite President

George C. Miller

George C. Miller, formerly vice-president in charge of sales for the Bakelite Co., a division of the Union Carbide and Carbon Corp., has been appointed president of the company. Mr. Miller succeeds H. S. Bunn, vice-president of Union Carbide, who now succeeds the late J. W. McLaughlin as chairman of the board of Bakelite and as a member of the Appropriations Committee of Union Carbide. Mr. Miller attended Daniel Baker College in Brownwood, Texas. He entered the employ of the Linde Air Products Co., another division of Union Carbide, in 1922. After several years as a field engineer, and subsquently a construction engineer for the Carbide and Carbon Chemicals Co., he was transferred to this company's early development work on plastics. In 1934, Mr. Miller became a technical sales representative for the Plastics Department of Carbide and Carbon, rising progressively to sales manager of this department, general sales manager of the Thermoplastics Department of the Bakelite Co. in 1944; vice-president and general sales manager of Bakelite in 1945; and vice-president in charge of sales in June, 1952. Mr. Miller is a member of the Society of the Plastics Industry, Society of Automotive Engineers, Chemists Club of New York, and the North Hempstead Country Club.

Federal-Fawick Drops Merger Plan

Directors of the Federal-Fawick Corp., Cleveland, Ohio, have decided to abandon a plan to merge with the Orange Roller Bearing Co., Inc., of New York, N. Y. Shareholders had previously approved the merger. R. S. Huxtable, president of Federal-Fawick, stated that the directors decided it would not be in the best interest of the corporation to take any further action toward consummation of the merger. Under the discarded plan, Orange would have been merged into Federal-Fawick through an exchange of stock. Federal-Fawick planned to issue 115,000 shares of its common in exchange for all of Orange's common. It also had planned to issue 2,000 shares of $4.50 preferred stock in exchange for Orange's preferred on a share-for-share basis.

Develops New Conveyor Belt

A patent covering a new conveyor belt designed to carry hot materials has been issued to the B. F. Goodrich Co. by the U.S. Patent Office. Feature of the new construction is a nylon cord breaker embedded in the thick rubber cover of the belt to resist heat damage and extend the service life of the cover. The nylon cords reinforce the rubber cover, resist formation of transverse cover cracks caused by heat and prevent the penetration of such cracks to the carcass, the company states. The extensible, heat-resistant nylon cords stretch with the rubber cover when the belt is flexed as it moves around a pulley. According to Goodrich, the service life of conventional hot material conveyor belts is shortened because of the tendency of the rubber covers to oxidize after exposure to the hot materials. Oxidation results in a reduction of elasticity of the rubber cover. A stiff cover soon develops cracks as the belt bends around the conveyor pulleys. Heat penetrating these cracks reaches the carcass and causes separation of the carcass plies and the rubber cover. The patented nylon cord breaker, paired with a glass fabric belt carcass, has been used successfully in handling hot lime, nitrates and sand up to 500° F., Goodrich states.

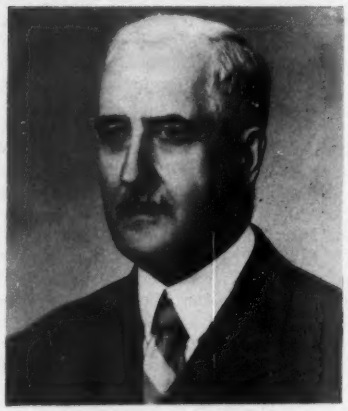
Congoleum Buys Sloane-Blabon

Congoleum-Nairn, Inc., Kearny, N. J., has announced it has bought for "not to exceed $10,250,000" the assets of Sloane-Blabon Corp., linoleum-making subsidiary of Alexander Smith, Inc., Yonkers, N. Y. Marketing facilities of Sloane-Blabon will be combined with Congoleum-Nairn's Delaware Products Division to form Sloane-Delaware Floor Products, with headquarters in Trenton, N. J. Sloane-Blabon, which also makes felt base, asphalt tile and other plastic products, has plants in Trenton, Philadelphia, and at East Baldwin, Maine. Included in the purchase were assets, except cash, of about $23,200,000. F. J. Andre, president of Congoleum-Nairn, said current assets with a net book value of about $8,000,000 will add substantially to Congoleum-Nairn's working capital. He stated that his company did not assume liabilities of Sloane-Blabon.

Atomic Industrial Forum Formed

A new group, to be known as the Atomic Industrial Forum, Inc., has been formed with headquarters in the Engineering Societies Building, 29 West 39th St., New York, N. Y., to foster and encourage the utilization of atomic energy in accordance with the best traditions of American democracy and free competitive enterprise. Presidents or key atomic energy executives of 13 corporations or institutions of higher education were named as directors of the organization. Members of the board include John L. Collyer (Goodrich), Dr. T. Keith Glennan (Case Institute), John A. Martino (National Lead), Admiral Earl W. Mills (Foster-Wheeler), Dr. Mark E. Putnam (Dow Chemical), Ross W. Thomas (Phillips Petroleum), and others.

Retires From U. S. Rubber



George W. Blair

George W. Blair, formerly development manager of the Footwear and General Products Division of the U. S. Rubber Co., retired on April 30 after 41 years of service with the company. His primary interest during those years was the development and commercialization of new products. He pioneered in the development and commercialization of foam rubber and is a co-inventor on several foam rubber patents. Mr. Blair also directed development and sale in the early 1930's of a contour automobile mat that paved the way for a new type of mat. In 1940, he spearheaded development of rubber fuel cells and with General James Doolittle, he directed design and production of the extra rubber gasoline tanks that made possible the bombing of Tokyo during World War II.

During World War II, Mr. Blair also directed the development of V-Board, the rigid material supporting fuel cells after they had been punctured by gunfire. Other war products under his direction were radomes, Flotofoam, and large storage tanks for gasoline, oil and water. New civilian products resulting from his wartime developments include Royalite and Satusply. Early development of sponge rubber underpadding for carpets was also under his direction.

U. S. Sells Jasco Stock

The Standard Oil Development Co., a subsidiary of Standard Oil Co. (New Jersey), has purchased from the government for $1,200,000, 50% of the outstanding capital stock of Jasco, Inc., Attorney General Herbert Brownell, Jr. announced on May 13. The company previously owned 50% and now becomes sole owner of Jasco. The government's 50% had been held by the Attorney General after seizure during World War II from I. G. Farbenindustrie, A. G. of Germany. It was offered at public sale on April 1 and six bids were opened on April 30. Standard's bid was the highest, the Attorney General said. Jasco is a patent holding company that licensed patents used principally in the production of Butyl rubber, butadiene, styrene and oppanol. Mr. Brownell said the government had received $700,000 in dividends during the time it held the stock.

LITCHFIELD OUTLINES PLAN FOR DISPOSAL OF SYNTHETIC PLANTS

A program to prevent any interruption of synthetic rubber production during the approaching transfer of synthetic rubber plants from government to private ownership has been suggested by P. W. Litchfield, board chairman of the Goodyear Tire & Rubber Co. His program is outlined in detail in the current "Notes On America's Rubber Industry, No. 19," "The Synthetic Industry From Infant to Indispensable Giant in 10 Brief Years."

Emphasizing that the war-born synthetic rubber industry is vitally essential to America's security and progress, Mr. Litchfield said the following steps are necessary to protect the nation's interests: (1) That full production schedules be maintained between now and the time the synthetic plants are finally and officially transferred to private ownership and operation; (2) That we begin now to create a reserve stockpile of at least 200,000 tons of synthetic rubber, building from excesses beyond current needs.

The first step is essential, he said, to provide enough synthetic rubber for our needs and to keep the price of natural rubber within reasonable bounds. The stockpile is needed for security reasons, accentuated by the possibility of an interruption of production levels during the change of ownership, possibly as long as two years.

"I see no reason why these steps cannot be taken in stride and I believe our government and the rubber industry are obligated to take them in the public interest," said the Goodyear chief executive. He pointed out that some 900 fabricators of rubber products, large and small, and their millions of customers are directly involved in the forthcoming transfer of the nation's 29 government-owned synthetic rubber plants, and should be protected against any interruption of the flow of their raw materials. "Hence, the transition period which may be protracted, is a matter of great national concern. Now is the time to do the planning which will carry us over these rough spots if they should develop."

Discusses Current Situation

While the current situation is "comfortable", with supplies of natural and synthetic in balance with demand, and at reasonable prices, we must not be lulled into a sense of false security, Mr. Litchfield warned, citing three factors which must be borne in mind: (1) The current Communist aggression in Indo China which threatens the security of the rubber growing areas of Southeastern Asia; (2) The approaching disposition of government-owned synthetic plants to private corporations; (3) The steadily increasing demands for rubber. It is not unreasonable to expect that by 1960, these total needs will exceed present total capacities, natural and synthetic combined, by 25 per cent.

Emphasizing the vital stake that America has in the synthetic rubber industry, the Goodyear board chairman said victory in World War II would have been difficult, if not impossible, without it. "Now the synthetic rubber industry has gone on in an amazingly brief span to provide an indispensable foundation stone in our whole economic structure."

He pointed out that to maintain world economy at its present levels calls for 50% more new rubber than the areas planted to rubber trees will produce in 1953; that in this country alone total consumption of new rubber this year will amount to 80% of the year's entire world crop of natural rubber.

"The difference between the total need for rubber and the available supply of natural rubber is, of course, made up by the output of the synthetic rubber industry which, save for a small fraction, is centralized in this country. It is quite apparent that there will be little increase in the present output of natural rubber in the foreseeable future. A seven-year span exists between planting and tapping. Meanwhile, existing plantings are depleting themselves at a rate probably higher than they are being replaced."

The proposed buffer stockpile of natural rubber, which would place artificial restrictions on the price and supply of the material won't work, he declared, pointing to the failure of cartels in one form or another in the past. "A free competitive market, on the other hand, encourages improvement and efficiency in rubber growing and that is the only road to a sound and stable economy," Mr. Litchfield declared.

DR. JOHN T. BLAKE NAMED CHARLES GOODYEAR MEDALIST FOR 1953

As reported elsewhere in this issue, Dr. John Twiss Blake, director of research of the Simplex Wire and Cable Co., Cambridge, Mass., has been named Charles Goodyear Lecturer for 1953 by the Division of Rubber Chemistry, American Chemical Society. He will present his lecture and receive the Charles Goodyear Medal during the Fall Meeting of the Division in Chicago later this year. The Goodyear Award, founded in commemoration of Charles Goodyear's discovery of the vulcanization of rubber in 1839, is conferred annually by the Division to honor those who have performed outstanding service in the field of rubber technology.

Dr. John T. Blake

Born in Boston, Mass., in 1901, Dr. Blake was graduated from Tufts College in 1921 and received his Ph.D. in organic chemistry from the Massachusetts Institute of Technology in 1924. He served as an instructor in chemistry at Tufts, M.I.T., and Northeastern University while studying for his academic degrees. Joining the Simplex company in 1924 as a research chemist, Dr. Blake became director of chemical development in 1935 and director of research in 1940. A former chairman of the Division of Rubber Chemistry, Dr. Blake has also been a national councilor of the American Chemical Society and chairman of the society's Northeastern Section. He has been chairman of the Boston Rubber Group, the Boston Section of the American Institute of Chemical Engineers, the Boston Research Directors Club, and the Subcommittee on Wire Insulation of the American Society for Testing Materials.

Co-editor of the ACS monograph "Chemistry and Technology of Rubber," Dr. Blake has published many scientific articles dealing with the reinforcement of rubber, the thermochemistry of rubber vulcanization, the effects of light and ozone on rubber deterioration, the heat of vulcanization of synthetic rubber, water absorption by rubber, and the effect of soil micro-organisms on rubber insulation. He holds patents on the preserving of rubber, rubber coatings on electrical connections, and low plasticity rubber.

Dr. Blake, who was with the War Production Board during World War II, is a fellow of the Institute of Chemists and a member of the American Chemical Society, the Society of the Chemical Industry, the New York Academy of Sciences, the Institution of the Rubber Industry, and the Society of the Chemical Industry of Great Britain.

Witco-Continental Carbon Blacks

A desk card listing Witco Chemical Co.-Continental Carbon Co. carbon blacks and comparable blacks for the rubber industry is now available upon request. Included are the channel blacks; easy processing, medium processing, hard processing and conducting channel blacks; and the furnace blacks: semi-reinforcing, high modulus, fast extruding, medium abrasion, and high abrasion furnace blacks. For a free copy of Witco-Continental desk card 53-3, write to the Witco Chemical Co., 260 Madison Ave., New York 16, N. Y.

WASHINGTON HEARS ROBSON ON TIRES FOR MODERN VEHICLES

The May 20th meeting of the Washington Rubber Group held in the auditorium of the Potomac Electric Power Co. in Washington, D. C., was addressed by James J. Robson, manager of the Tire Engineering Division of the Firestone Tire & Rubber Co. Mr. Robson spoke on "Tires for Modern Cars." The speaker pointed out that every motorist is benefiting from the long years of intensive research and testing which have been devoted to development of safe tires for high-speed race cars.

In addition to its laboratory and conventional road tests, he said, Firestone has used the Indianapolis Speedway and other races to test the safety and wearing qualities of its tires. For twenty-nine consecutive years they have been on the winning cars of the Memorial Day Classic at Indianapolis.

Work of the rubber industry on high speed tires has resulted in the increase of the safety factor in tires at all speeds, for "if a tire is safer at high speeds, it is also safer at normal speeds. Thus," according to Mr. Robson, "every motorist benefits by improvements we in the tire industry have made in designing tires for modern cars." Greatest technical progress at the present time is being made in development of tires with increased safety protection against blow-outs and in tires with better road stability and cornering power at high speeds.

Problems of High-Speed

Principal high-speed problems are the development of heat up to 280 degrees at very high speeds and the tendency of a tire to distort its shape. These problems are being solved by changes in tire construction and in materials which improve the heat resistance of tire treads and bond the tread integrally into the cord body of the tire. Further steps in welding the tire together have been taken in improved fabric dips which establish the bond between the individual cords and the surrounding rubber.

"Synthetic rubber treads have proved satisfactory for high-speed passenger tires and are considered by many to be superior for this service," Mr. Robson stated. Tips on how to get maximum safety from high-speed tires also were offered by Mr. Robson. A break-in period for brand new tires will give the tire a chance to equalize stresses and gain its initial growth, and, if possible, to be reinflated before being driven at top speed. By moving into top speed by steps, the tire gets a chance to establish proper heat balance between tread temperature and contained air temperature the speaker declared.

Shifting of the weight farther forward in the car during recent years has increased the traction problem. "The tire industry has recognized this, and more and more we are incorporating extra traction devices such as slots, slits, and similar gripping edges into our tires," Mr. Robson stated.

In demonstrating advantages of tubeless tires, Mr. Robson pointed out the substantial reduction in weight, the puncture sealing and the cooler running characteristics which make the tires more desirable for riding comfort and safety. The tubeless truck tire also offers the advantages of being mounted and demounted as simply as a passenger car tire, as well as reduced weight and the elimination of tube and flap troubles.

A high-speed stroboscopic film dramatically illustrated the distortion problem which tire engineers are tackling at speeds greater than 100 miles per hour. Another film, "The Fabulous 500," based on last year's Indianapolis 500-mile race, also was shown to the rubber group by Mr. Robson as a part of his discussion of his company's development work with high-speed tires.

Coming Events in the Rubber Industry

June 23. Los Angeles Rubber Group, Hotel Statler, Los Angeles, Calif.

June 26. Detroit Rubber and Plastics Group, Summer Outing, Hillcrest Golf Club, Detroit, Mich.

June 29-July 3. A.S.T.M., Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

July 24. Chicago Rubber Group, Summer Outing.

Aug. 4. New York Rubber Group, Golf Tournament.

Aug. 21. Philadelphia Rubber Group, Cedarbrook Country Club, Philadelphia, Penna.

Sept. 9-11. Rubber Division, A.C.S., Fall Meeting, Hotel Sherman, Chicago, Ill.

Sept. 12. Connecticut Rubber Group, Summer Outing, Paterson Club, Fairfield, Conn.

Sept. 17. So. Ohio Rubber Group, Engineers' Club, Dayton, Ohio.

Sept. 19. No. California Rubber Group, Summer Outing, Adobe Creek Lodge, Los Altos, Calif.

Oct. 2. Detroit Rubber and Plastics Group, Fall Meeting, Detroit-Leland Hotel, Detroit, Mich.

Oct. 6. Buffalo Rubber Group, Hotel Westbrook, Buffalo, N. Y.

Oct. 6. Los Angeles Rubber Group, Hotel Statler, Los Angeles, Calif.

Oct. 16. Boston Rubber Group, Fall Meeting, Hotel Somerset, Boston, Mass.

Oct. 16. New York Rubber Group, Fall Meeting, Henry Hudson Hotel, New York, N. Y.

Oct. 23. Akron Rubber Group, Mayflower Hotel, Akron, Ohio.

Nov. 6. Chicago Rubber Group, Fall Meeting, Furniture Mart, Chicago, Ill.

Nov. 10. Los Angeles Rubber Group, Hotel Statler, Los Angeles, Calif.

Nov. 13. Philadelphia Rubber Group, Poor Richard Club, Philadelphia, Penna.

Nov. 29-Dec. 4. A. S. M. E. Annual Meeting, Hotels McAlpin and Statler, New York, N. Y.

Dec. 3-4. Society of the Plastics Industry, Fifth Film, Sheeting and Coated Fabrics Division Conference, Commodore Hotel, New York, N. Y.

Dec. 11 Boston Rubber Group, Xmas Party, Hotel Somerset, Boston, Mass.

Dec. 11. Detroit Rubber and Plastics Group, Xmas Party, Sheraton-Cadillac Hotel, Detroit, Mich.

Dec. 11. New York Rubber Group, Xmas Party, Henry Hudson Hotel, New York, N. Y.

Dec. 12. So. Ohio Rubber Group, Xmas Party, Miami Valley Country Club, Dayton, Ohio.

Dec. 15. Buffalo Rubber Group, Xmas Party.

Dec. 18. Chicago Rubber Group, Xmas Party, Morrison Hotel, Chicago, Ill.

Jan. 24, 1954. Philadelphia Rubber Group, Poor Richard Club, Philadelphia, Penna.

Jan. 29, 1954. Akron Rubber Group, Winter Meeting, Mayflower Hotel, Akron, Ohio.

Mar. 26, 1954. Akron Rubber Group, Spring Meeting, Mayflower Hotel, Akron, Ohio.

Apr. 14-16, 1954. Rubber Division, A.C.S., Spring Meeting, Hotel Brown, Louisville, Ky.

Sept. 15-17, 1954. Rubber Division, A.C.S., Fall Meeting, Hotel Commodore, New York, N. Y.

CHICAGO GROUP ELECTS OFFICERS; HEARS TALKS ON NEW ELASTOMERS

The May 22nd meeting of the Chicago Rubber Group held at the Morrison Hotel in Chicago, Ill., featured the installation of newly-elected officers and a panel discussion on "What's New in Elastomers." Members installed as officers at the meeting included the following: *President*, A. J. Hawkins, Jr. (DuPont); *Vice-President*, S. M. Lillis (Victor Mfg.); *Secretary*, A. L. Robinson (Harwick Standard); *Treasurer*, L. W. Heide (Acadia Synthetic Products).

W. A. Cary (Cary), J. E. Meyer (Herron & Meyer), Harold Stark (Dryden Rubber), and J. B. Braden (Industrial Rubber Goods) were installed as directors of the group. Hold-over directors are: J. E. A. Hopkins (Van Cleef), M. E. Jones (Marbon); M. J. O'Connor (O'Connor & Choate), and C. H. Skuza (Central Rubber & Mfg.).

The discussion leader for the panel on "What's New in Elastomers" was J. E. Martin (Williams Bowman). Panel members included George Konkle (G-E) and B. B. White (Dow Corning), both of whom spoke on the silicones. Roger Bascom (Goodrich Chemical) discussed the polyacrylates, while B. W. Fuller (DuPont), spoke on "Hypalon S."

In his talk, Mr. White described the amazing growth of the silicone industry and predicted that in 1953 $45,000,000 worth of molded goods would be produced of this material. He discussed development work with new silicone elastomers for general purpose, low temperature and low shrinkage properties. He also explained the use of the hydrophobic fillers made by DuPont, Cabot and Columbia-Southern. During his talk on properties and processing methods, he showed colored slides of the milling operation, hopper feeding and the use of the doctor blade.

Mr. Konkle described the uses of silicone rubber parts and illustrated his talk with colored slides showing applications and actual parts in automotive and aeronautical installations. He compared the properties of natural rubber, chloroprene, GR-S and Buna-N types with silicone rubber. He pointed out that the salient features of the silicone rubbers were their heat resistance and low temperature flexibility.

Mr. Bascom described the properties of the polyacrylate rubbers which embody very good heat resistance, excellent oil resistance, but poor low temperature flexibility. He pointed out that they were not to be considered as general purpose rubbers. Mr. Bascom explained that amines were necessary to effect the cure. They have replaced, in many cases, the sodium meta-silicates. The most outstanding applications of polyacrylate rubbers, he said, are in contact with hypoid lubricants.

In his talk, Mr. Fuller described the properties of Hypalon-S. He explained how additions of Hypalon to regular stocks give high tensiles, improved abrasion, ozone and light resistance. Some outstanding applications, he observed, are in white sidewall tires and floor mats.

Mr. Martin, for his part, discussed the manner in which all the new elastomers were widening the scope of fabrications for new and unusual applications. The new elastomers, he said, fill a need for properties not found in conventional rubbers.

New Kok-Saghyz Experiments

The Japanese government has decided to experiment with Russian dandelions (kok-saghyz) as a source of natural rubber. The newspaper *Asahi* said the trial program would be conducted in Hokaido, Japan's northernmost and least-developed island. According to reports reaching Stockholm, meanwhile, the Soviet Union is attempting to produce rubber from the same source in Lithuania. Kok-saghyz has been cultivated in Lithuania on Soviet orders for the past three years. Recently, Soviet experts are said to have come to Lithuania to install new machines which will facilitate the extraction of rubber from the kok-saghyz. So far, some 70 farms in the Vilnus region alone have been chosen to concentrate exclusively on the cultivation of this plant. No processing installations have so far been reported, and it is believed that the raw rubber is exported to Russia.

Kodak Enters Polyethylene Field

Eastman Kodak Co. has signed agreements with Imperial Chemical Industries, Ltd., licensing Kodak to manufacture and sell polyethylene. Present plans call for construction of a plant at Longview, Texas, with an estimated capacity of 20,000,000 pounds annually. Albert K. Chapman, Kodak president, and James C. White, president of the Texas Eastman Co., said in a joint statement that Eastman Kodak some time ago received certification for rapid tax amortization covering the proposed facilities and has been developing plans for several months. Construction is expected to begin during the early part of the summer. Texas Eastman will operate the polyethylene facilities. Sales will be handled by Eastman Chemical Products, Inc., sales representative for both the Texas and Tennessee Divisions of Eastman Kodak.

General Chemical to Expand

Two large new plants, one for the production of sulfuric acid, and the other for the production of trifluorochloroethylene, will be built by the General Chemical Division of the Allied Chemical & Dye Corp., according to a recent announcement. Site of the proposed expansion is the Baton Rouge, La., works. The new sulfuric plant is scheduled for operation by the end of 1953. The trifluorochloroethylene plant will utilize a new process developed by the company. The product will be marketed under the trade name "Genetron 265".

ELASTOMER AND PLASTICS GROUP SPONSORS SHORT TALK SYMPOSIUM

Approximately 75 members and guests attended the May 19th meeting of the Elastomer and Plastics Group of the Northeastern Section, American Chemical Society, which was held at the Massachusetts Institute of Technology in Cambridge, Mass. The meeting featured a "Short Talks Symposium" on a variety of subjects.

John H. Hendrick (American Durafilm) delivered a talk on "Coating Ceramics with Teflon." The speaker enlarged upon the useful properties, costs and successful applications of Teflon coatings. He also discussed the nature of Teflon dispersions with a description of the methods, hazards and limitations of processing these coatings.

"The Spectroscopic Analysis of Organic Polymers in the Glow Discharge" was the title of a talk by Daniel Norman (New England Spectrochemical Laboratories). He discussed spectroscopic techniques which are applicable to specific industrial problems. These techniques, he said, have proved valuable in empirical studies of the curing times and temperatures of commercial polymers, the detection and quantitative determination of amino catalysts in plastics and the identification of resin coatings on textiles and paper. He also discussed the fact that organic compounds can be disassociated into free radicals in high-current-density low-vacuum discharges.

David Kirkpatrick (Boston Woven Hose) spoke on the "Rotocure," and presented a brief outline on the development of the unit and why he feels the unit to be the logical machine for the continuous vulcanization of a sheet-like material.

"New Pigments for the Rubber and Plastics Industries" was the subject of the talk delivered by E. M. Dannenberg (Godfrey L. Cabot). Mr. Dannenberg stated that in the last ten years, workers in Europe and in this country have produced very finely divided organic pigments which are now available in pilot plant and semi-commercial quantities. He described the general process for the preparation of silicon dioxide, aluminum oxide, and titanium dioxide. The use of silicon dioxide and aluminum oxide as outstanding reinforcing agents for silicone rubber were described.

Fritz Rosenthal (Nashua Corp.), for his portion of the symposium, presented a short talk on "Synthetic Resins in the Paper Converting Industry." He presented a case history of a large paper converting company showing how synthetic resins have made an inroad in all their operations. The major paper converting activity, coating, was covered as was gumming and waxing.

Louis Leaman (Magic Chemical), presented a talk on "Rheology of Rubber Solutions and Suspensions." Mr. Leaman presented a study of the rheology of rubber cements and doughs covering the application of viscosity studies to the synthetic rubber program. Developments in the instrumentation of this field were also discussed. Heavy rubber solutions or doughs were given some attention by the speaker in concluding his talk.

OPENING OF NEW SILASTIC PLANT MARKS DOW CORNING BIRTHDAY

In celebration of its 10th anniversary, the Dow Corning Co. of Midland, Mich., held a special editorial conference which was featured by a tour of its new Silastic plant. The new plant went into production recently, and is said to be the largest and most modern plant in the world for the production of silicone rubber. Associated with the new plant are a quality control laboratory, a laboratory for product evaluation, and another devoted to fabrication methods.

Visitors were also shown the new methyl chloride plant and a 6000 kva electric furnace plant for producing silicon from quartz rock and coke. Unique in this country is a new plant built for Dow Corning in Germany for making silica "soot." This material contributes a great deal to the superior physical and electrical properties of Silastic. Also shown were the Grignard and direct process plants, and the pilot and semi-plants for the production of silicone intermediates, distillation units and finishing plants.

The new Silastic plant provides over 45,000 square feet of floor space for the manufacture and compounding of a wide variety of Silastic pastes and stocks. Production equipment includes a Banbury mixer, a 300-gallon and two 150-gallon dough mixers to polymerize the silicone fluid base and perform the initial compounding operation. Further compounding is carried out on two 84-inch and three 60-inch 2-roll mills, plus several smaller 2- and 3-roll mills for special stocks and pastes. To exclude exterior contamination, the milling room is pressurized. After milling, the Silastic itself is forced through fine mesh screens to remove possible interior contaminants.

Although current Silastic production is in the range of 500,000 pounds per month, provision has been made for future expansion in the same building to as much as three times this amount. Considering the rapid increase in demand for a material which was unknown a few years ago, company officials pointed out, it is quite possible that this production figure will be reached—and passed—in a few years.

Among new materials which were shown to the visitors were two new Silastic stocks of particular interest to the electrical, automotive and aircraft industries. These are said to be much easier to fabricate and have a combination of properties engineered to give long and reliable service in most mechanical and electrical applications.

Officials of the company pointed out that they have learned how to make a silicone resin that can be foamed in place to form a lightweight cellular structure that will withstand direct contact with the flame of a blow torch. It retains its physical strength at temperatures in the range of 400° to 500° F. and it has very low thermal conductivity.

Although most silicone products are so non-reactive and "abhesive" that they make excellent release agents, new compounds have been developed which are notable among adhesives for the tenacity with which they stick to a wide variety of surfaces including such inert materials as polyethylene, tetrafluoroethylene, and even silicone-varnished glass and silicone rubber.

Known as Dow Corning "XC-270," this new silicone product has an adhesive strength that compares favorably with that of conventional pressure-sensitive adhesives at room temperature. It is unique among such adhesives, the company said, in its retention of high adhesive strength at temperatures ranging from —55° to over 300° F. It tends to soften at higher temperatures, but still retains good pressure sensitivity and adhesion long after exposure to temperatures up to 400° F.

The day following the extensive tour of the Dow Corning Silastic plant, visitors were taken on an automobile tour of the plant of the Dow Chemical Co. in Midland. An editorial conference was held and luncheon was served. Guests were also escorted on a tour through the laboratories of the parent company.

Rubber Takes to the Rails

Rubber flooring and Airfoam cushioning, both by the Goodyear Tire & Rubber Co., are among the many ultra-modern products incorporated in four new streamline railway trains recently placed in service by the Chicago, Burlington and Quincy Lines between Chicago and Kansas City. Known as the "Kansas City" and "American Royal" Zephyrs, the trains constitute the "last word" in luxurious travel facilities. Goodyear's Wingfoot rubber tile flooring in several attractive shades, and with its proven ability to absorb shock, deaden sound and to resist abrasion, scuffing and stains is featured in the new trains. Airfoam cushioning in the seats of the new trains affords the most luxurious riding comfort available.

New York Rubber Inflatables

New York Rubber Corp., New York, N. Y., is now producing a line of inflatables including the "Airubber" camp and sleeping bag mattresses, surf riders and "Pak-Boat" inflatable rubber boats. The camp and sleeping bag mattresses are made of natural rubber and strong cloth fabrics. Accessory items include cushions and pillows. The surf riders are colorfully decorated, doubling as a beach mattress and for water sports. The "Pak-Boat" is an entirely new dory-style inflatable rubber boat. The sides and bottom are separate compartments for added safety. A built in motor mount takes an outboard motor up to 5 hp. The boat seats two or three persons comfortably. The inflated weight of the unit is 62 pounds. It is 10 feet 3 inches long, 3 feet 10 inches wide, and 17 inches high. Deflated, the boat rolls up in a carrying case, with oars and pump, 39 by 18 by 9 inches. The weight of the case with oars and pump is 75 pounds.

RUBBER TECHNOLOGY PROGRESS SUBJECT OF DELFT CONFERENCE

Rubber-Stichting has announced the program scheduled for the International Symposium on Progress in Rubber Technology which will be held in Delft, Holland, on October 7 and 8 in conjunction with "International Inventors Day." A number of interesting papers have been scheduled for presentation at the conference including one on "Reinforcement of Rubber by Carbon Black," by a representative of Godfrey L. Cabot, Inc.

Germany will also be represented at the conference with a paper on "Reinforcement of Rubber by Inorganic Fillers" by a speaker from Degussa, Frankfurt/Main. "Reinforcement of Rubber by Resins" is another paper to be presented at the conference, this one by a representative of the Institut Francais du Caoutchouc of Paris.

A representative of the Indonesian Institute for Rubber Research, Bogor, Java, will present a paper on "Carbon Black—Containing Basic Mixtures from Hevea Latex," while the Netherland's will be represented by five papers: "Rubber Flooring," "Testing of Latex," "Manufacture of Latex Foam," and "Rubber Derivatives."

The international character of the conference is illustrated by the fact that both lectures and discussions can be held in German, French, English and Dutch. Rubber-Stichting will provide the necessary interpreters.

Applications for participation in the conference can be sent to Rubber Stichting, Postbox 66, Delft, Holland. Participation does not involve any charges. Rubber-Stichting advises, however, that the number of lectures has already been fixed, and that no new papers will be accepted.

As for the "Inventors Day," Rubber-Stichting states that a satisfactory number of subscriptions have been received from various countries. It is still possible to be registered for the event, but applications should be sent to Delft without any delay.

Introduces "Kure-Blend MT"

Harwick Standard Chemical Co., Akron, Ohio, has announced the addition of "Kure-Blend MT" to its line of materials for use in the rubber industry. Fifty parts of tetramethyl thiuram disulfide are coprecipitated with fifty parts of GR-S to form "Kure-Blend MT", which is a latex compounded ultra accelerator masterbatch. The product may be used in either a Banbury or open type mill. It is said to disperse readily in all types of natural rubber, GR-S or Buna N stocks. The use of this masterbatch eliminates dusting and offers more accurate weighing. Because the same amount of activation is obtained with the active agent in Kure-Blend MT as with tetramethyl thiuram disulfide in powder or rod form, no adjustment in formulas is necessary except for the allowance for the rubber in the master-batch. Kure-Blend MT is a new product of the Chemical Division of the General Tire & Rubber Co.

Joins U. S. Rubber Reclaiming

C. G. Travers

C. G. Travers has joined the U. S. Rubber Reclaiming Co., Inc. of Buffalo, N. Y., as manager of industrial and public relations activities. Mr. Travers has spent more than thirty years in the rubber industry. For the past twenty years he was district sales manager and manager of industrial relations for Hewitt-Robins Inc. Previous to that, he was in various sales and production positions with the New York Rubber Corp. and the Garlock Packing Co. He is an active member of the Buffalo Chamber of Commerce and the Industrial Relations Association of Buffalo.

Issues Collector's Item Record

J. M. Huber Corp., New York, N. Y., which among its many products manufactures carbon black for the phonograph industry, has issued a collector's item record. The record celebrates the 50th Anniversary of RCA Victor Red Seal Records and the Diamond Jubilee of the record industry. Enclosed with an issue of the *Huber News,* bi-monthly company magazine, the record produces two famous master recordings — "Tell Me Pretty Maiden," featuring Vess Ossman, "The Banjo King"; and the "Stars and Stripes Forever" as played by John Philip Sousa's band. The Ossman reproduction is taken from an RCA Victor master made in 1902, and is one of the oldest in existence. The Sousa record was made in 1926. It is thought that the reproductions, as a collector's item, may attain unusual value.

Brodsky Forms Own Company

Michael Brodsky, founder of the M & N Machine Tool Works of Clifton, N. J., has resigned from that company to form his own hydraulic press manufacturing plant. The new firm, known as Clifton Hydraulic Press Co., will be located at 292 Allwood Road, Clifton, N. J., and will be managed and operated by Mr. Brodsky. A staff of designers and machinists will produce the improved "Clifpress" line of hydraulic presses and equipment. Engineering services will also be provided. An export office for the firm has been established at 44 Whitehall St., New York, N. Y.

Reports on Tire Test Waste

A House Armed Services Subcommittee has reported that the government spent about $2,000,000 yearly testing military tires that had been or could be tested by their manufacturers. The subcommittee demanded that the activity, carried on at Camp Bullis, Texas by the Army and the Reconstruction Finance Corporation, be halted at once as a "perfectly senseless waste." It was reported that the Army classified this work "restricted" for security reasons, and said it was "no wonder" they did so. "Anyone would be ashamed to have this waste disclosed," subcommittee chairman William E. Hess (Rep., Ohio), declared. The subcommittee said the government tire testing occupied 284 civilian workers and three Army employees who had a test fleet of twelve passenger cars and 101 trucks. It said the world's biggest tire maker, which produced three times the number of tires used by all the armed forces, did its testing with only ninety-nine workers and a fleet of nineteen cars and fourteen trucks.

To Build New Black Plant

Continental Blacks, Inc., has announced plans to build a plant at Ponca City, Okla., for the manufacture of 40,000,000 pounds of high abrasion furnace black annually. This will supplement the production of a similar amount of HAF black produced at Lake Charles, La., over the past two years. Announcement of the new facility was made by the Continental Oil Co. and the Witco Chemical Co., which will market the output of the new plant. Construction of the new plant, which will receive its raw material from Conoco's refinery at Ponca City, will start immediately and is expected to be completed early in 1954.

Rubber Industry Safety

The Executive Committee of the Rubber Section of the National Safety Council met in Detroit, Mich., on June 12 at the invitation of the U. S. Rubber Co. The general chairman of the Executive Committee, Robert M. Boyles (Midwest Rubber Reclaiming), presided at the meeting. The activities of the various committees were reviewed and new assignments made. Final arrangements were also made on the Rubber Section Program which will be presented at the National Conference which will be held in Chicago, Ill., in October.

Renovating Industrial Tires

Maine Rubber Products Co., Westbrook, Maine, is presently engaged in the re-tiring of industrial solid tires. The firm first began experiments in this direction during the steel shortage. It is now servicing all of New England, and parts of New York State, New Jersey and Pennsylvania. In the first step of the process, old rubber is completely removed from old steel rims. The rims are then thoroughly cleaned. A new tread is then applied to the rim. The company says that savings effected by re-using the rims lowers maintenance costs by some 20%.

Allick Joins New England Staff

H. D. Allick

H. D. Allick, associated with the Goodyear Tire & Rubber Co. since October, 1952, has been assigned to the New England district staff of the Chemical Division of the company. He will headquarter in Boston and will service Pliovic vinyl resin accounts. Mr. Allick recently completed seven months of specialized training in Goodyear's development laboratories in Akron. He has had previous experience in technical service and development compounding. He is a graduate of the Case Institute of Technology with a B.S. degree in chemical engineering.

L. W. Cabot Named Vice-President

Godfrey L. Cabot, Inc., Boston, Mass., has announced the election of Louis W. Cabot as vice-president and treasurer to succeed Ralph Bradley, who resigned from the company as of May 1. Mr. Cabot is a grandson of the founder of the company and until recently was resident in England as managing director of Cabot Carbon, Ltd., British subsidiary of the Boston company. Mr. Bradley had been an officer of the company since 1929. He will continue in a part-time capacity and as a member of the board of directors. Willard P. Smith, associated with the company for twenty-six years, has been elected vice-president. He has been eastern production manager in charge of natural gas operations in the Appalachian area for the past five years and will continue in that field of operations in his new capacity as vice-president.

Third-Line Tires Reported

According to newspaper reports, two of the "Big Four" rubber companies are planning to introduce a third line tire which will sell at about $6 under the price of second line tires. Commenting upon the reports, a spokesman for the Firestone Tire & Rubber Co. said that as far as his company was concerned it had no intention of putting such a tire on the market. He said the company had no definite plans at this time regarding the marketing of a lower price tire. Other companies have not commented upon the reports.

Rubarite Company Formed

The formation of Rubarite, Inc., a company which will manufacture and sell synthetic rubber powders for use in asphalt for roads and in other asphalt materials has been announced by the joint owners, the Goodyear Tire & Rubber Co., the National Lead Co., and the Berry Asphalt Co., a subsidiary of Bird and Son, Inc. of Walpole, Mass. Rubarite, a free-flowing, unvulcanized synthetic rubber product, was developed by Goodyear with the cooperation of Berry Asphalt and the Baroid Division of National Lead. In the past few years, the special compound has been successfully used on a number of heavily traveled test roads. Officers of Rubarite, Inc., have been selected from the parent companies. H. P. Pullar, president, and G. B. Coale and H. A. Endres, vice-presidents. Mr. Pullar is president of Berry Asphalt, Mr. Coale is assistant general manager of the Baroid Sales Division of National Lead, and Mr. Endres is manager of rubber and plastics research at Goodyear. General manager of the new company is Colonel Walter F. Winters, former chief engineer of the Asphalt Institute. A plant to manufacture the new product is now under construction at Magnet Grove, Ark. Headquarters for Rubarite, Inc., will be located in the Board of Trade Building, Chicago, Ill.

U.S. Rubber Appoints Herrly

U. S. Rubber Co. has announced the appointment of Raymond A. Herrly as plant manager of its new foam rubber manufacturing plant to be built in Santa Ana, Calif. Since manufacturing operations in the new plant are scheduled to start late this year, Mr. Herrly will continue for a few months in the company's Mishawaka, Ind., plant where he has been manager of industrial engineering for three years. A graduate of Notre Dame University, Mr. Herrly started with U. S. Rubber 14 years ago as a control chemist in foam rubber at Mishawaka. Later, he was made foam superintendent. During World War II, when foam rubber could not be manufactured, he served as assistant superintendent of fuel cell production and as superintendent of plastic board production.

Duranyls Vinyl Stabilizers

Alframine Corp., New York, N. Y., has announced the development of a new series of stabilizers for vinyl resins claimed to be non-toxic, non-inflammable, and non-irritating to the skin. Called "Duranyls", the use of the product is said to result in a plastic which is tougher, less brittle and which greatly improves its physical properties. Discoloration is also prevented. Use of Duranyls also reduces temperature and time in the milling process, the company states. They are especially recommended if relatively inexpensive alkylated aromatics are used as plasticizers. Certain aromatics in combination with the new product produce vinyl resin plastics which are scratch self-sealing. The new stabilizers also create anti-static qualities in addition to stabilization if used in larger quantities.

Retains Contraceptive Ban

The Connecticut State Senate has rejected a bill which would repeal a law forbidding the use of contraceptives in the state. The bill would repeal a 74-year-old statute which was described as unenforceable by some State Senators. One Senator stated that a police force of 500,000 would have to be posted in every home in the state to enforce the law. "It is a ridiculous and unenforceable law," he said. He noted that the law does not prohibit the sale of contraceptives in the state. On a voice vote, the Senate overwhelmingly defeated the bill.

Stalwart Buys Jasper Rubber

Stalwart Rubber Co. of Bedford, Ohio, has purchased the Jasper Rubber Co. of Jasper, Ga., for $250,000. Stalwart Rubber took possession of the physical assets of Jasper Rubber on May 25, and plans to install added molding presses, and to expand the facilities of the plant to a considerable extent. Present plans call for the production of molded rubber products of the type manufactured by Stalwart Rubber at the Bedford plant. When the Jasper plant is operating at capacity, some 150 persons will be employed. Jasper Rubber Co. will continue under that name, although development, technical work, sales and financing will be handled by Stalwart Rubber. Everett M. Atherton will be in charge of personnel at the Jasper Rubber plant, while James E. Ingram will be chief engineer in charge of all equipment and maintenance. John Kravetz of the Bedford plant will be general manager in charge of all operations at the Jasper Rubber plant. Included in the property sale was a 70 by 300 foot building and 25 acres of land.

Boston Woven Hose Appointments

Boston Woven Hose & Rubber Co., Boston, Mass., has announced three key appointments to its recently expanded Research and Development Department. Donald Johnston has been named manager of hose development, while Edward E. Stritter has been appointed plastics development manager and William E. Wells has been named to head the Belt Development Division. Mr. Johnston, with B. S. and M. S. degrees from Tufts College, has been associated with the company for seventeen years. He was, until recently, plant superintendent and superintendent of process engineering. Mr. Stritter, a graduate of the Massachusetts Institute of Technology, has also been with the company for seventeen years, the last four as assistant technical superintendent. Mr. Wells has been with Boston Woven Hose for just over four years, concentrating on V-belts and short flat transmission belts. He has nearly a quarter century's experience in the rubber industry as a product engineer.

G-E Introduces SE-100 and SE-550

The Chemical Division of the General Electric Co., Pittsfield, Mass., has introduced a new silicone rubber, "SE-550", and a new silicone rubber coating material, "SE-100". SE-550 is believed to be the world's most cold-resistant elastomer. The material shows little increase in modulus at —100° F. and retains useful flexibility after 24-hour exposure at —120° F. This extreme low temperature usefulness is combined with high strength and unusual elongation. SE-550 also has good compression set and electrical properties and remains inert at temperatures as high as 500° F. The new material is being used to seal four access and escape hatches of the new C-124 Globemaster military transport produced by the Douglas Aircraft Co. SE-550 is molded for Douglas by Los Angeles Standard Rubber, Inc.

SE-100 is said to be a versatile new silicone rubber coating material with remarkable electrical and physical strength as well as heat and abrasion resistance. It was developed to replace silicone resins in a wide range of insulating applications. It can be used for coating many Class H insulating materials or for dipping electrical components. The rubber can also be used at low temperatures for Class A and B insulation.

Octagon "Rustclean" Process

Octagon Process, Inc., Staten Island, N. Y., has developed a new process by which rust can be removed from rubber machinery and equipment by chemical methods. In the process, a new rust remover called "Rustclean" is applied by brush, rag or sponge and allowed to remain a few minutes until the rust or tarnish deposits are dissolved. The surface is then rinsed with clear water. For delicate machinery parts, a special "Rustclean" has been developed which will not disturb the fine tolerances of the metal. A thickened "Rustclean" is also available for overhead surfaces, so it will not run off. "Rustclean" is non-toxic and non-inflammable.

Connecticut Hears Werkenthin

Approximately 50 members and guests of the Connecticut Rubber Group attended the May 15th meeting held in the auditorium of the United Illuminating Co. in New Haven, Conn. Principal speaker of the evening was Theodore Werkenthin, head of the Ealstomer Branch of the Bureau of Ships, Department of the Navy. Mr. Werkenthin's address on "Shipboard Rubber Applications" was similar to one he delivered before the March 27th meeting of the Chicago Rubber Group. A full report on his paper will be found in the April, 1953, issue of RUBBER AGE.

Opens New Plant in Dallas

Better Monkey Grip Co. of Dallas, Texas, has announced the opening of a new 40,000 square foot plant in Dallas representing an investment of some $300,000. The new plant will produce camelback and a complete line of tire repair materials for retreaders and suppliers.

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STATEX®-125

the standard SAF

For passenger and truck tires STATEX-125 is *the* carbon for treads. In the past year production of STATEX-125 has been increased many times. Now demands made production schedules obsolete almost as soon as they were placed in effect. Compounders have been quick to take advantage of STATEX-125's dramatic ability to deliver greater mileage (an average of 25% over HAF), plus substantially increased resistance to flex cracking.

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When it comes to carcasses, most formulators think first of FURNEX, literally the "Old Faithful" of SRF blacks. Year after year it has provided good reinforcement with lowest possible heat build-up. You can count on FURNEX to furnish tensile, modulus and resilience in ideal balance.

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FF Statex B FEF Statex-M HMF Statex-93 SRF Furnex

NAMES IN THE NEWS

WEBSTER N. "WEB" JONES, dean of the college of engineering and science at Carnegie Tech, has been appointed vice-president in charge of industrial and government relations.

ROBERT B. BENNETT, formerly head of research and development for the Xylos Rubber Co., recently joined the faculty of the University of Florida, Gainsville, Fla., as professor of chemical engineering. His course will cover resins, plastics and elastomers.

KENNETH C. OSTREICHER has been appointed as a development engineer in the laboratory of the Flexible Tubing Corp., Guilford, Conn. He has been assigned to development work on special tubing coatings.

ROBERT I. WISHNICK, president of the Witco Chemical Co., and a trustee of the Illinois Institute of Technology, was presented the Service Award at the recent Annual Alumni Reunion Dinner for his work as an alumnus in the interest of I. I. T.

DR. GODFREY L. CABOT, founder and president of Godfrey L. Cabot, Inc., Boston, Mass., was named "Grand Old Man of the Natural Gas Industry" at the May 14 to 23 International Petroleum Exposition in Tulsa, Okla.

FRANK HIATT, formerly assistant national sales manager for A. G. Spalding & Bros., Inc., has been appointed national sales manager of the company.

MARTIN E. CONROY, previously associated with the Chemical Division of the General Electric Co., has joined the technical sales staff of the M. W. Kellogg Co. He has been assigned to market development of "Kel-F" trifluorochloroethylene polymer molding powders, waxes, greases, oils and dispersions.

ARTHUR R. BROADMAN, associated with the Heyden Chemical Corp. since 1939, has been elected vice-president of the corporation in charge of engineering and purchasing.

ALBERT M. STOVER, formerly manager of Marvinol plastics development for the Naugatuck Chemical Division, U. S. Rubber Co., has been appointed assistant to the director of research and development of the division.

J. F. D. ROHRBACH, president of Raybestos-Manhattan, Inc., was recently chosen from the alumni of his decade at the School of Commerce at New York University as the recipient of the John T. Madden Memorial Award, made annually to three graduates for "outstanding achievement in business, industry or professional life."

DR. WARREN W. LEIGH, formerly head of the Commerce Department of Akron University, has been named dean of the University's new College of Business Administration.

JOSEPH A. TANSEY, controller of the Cambridge Rubber Co., has been elected president of the Boston Chapter of the National Association of Cost Accountants.

JAMES M. HANNAN, associated with the Detroit sales division of the Standard Products Co. for the past five years, has been named assistant manager of the division.

ABNER C. HOPKINS, JR., formerly director of commercial chemical development at the research laboratories of General Mills, Inc., in Minneapolis, Minn., has been appointed director of chemical sales for the Chemical Division of the company.

LAWRENCE ROBERT O'ROURKE, formerly associated with Falk & Co., has been appointed a sales executive of the Pennsylvania Industrial Chemical Corp. with headquarters at the company's plant in Chester, Penna.

DR. H. E. SIMMONS, president emeritus of Akron University, received an honorary doctorate from the University at commencement exercises on June 16 in Akron.

HOWARD I. YOUNG has resigned as deputy administrator of the Defense Materials Procurement Agency and after a two months' European trip will return to the American Zinc, Lead & Smelting Co. of St. Louis, Mo., of which he is president.

R. M. WALLACE, assistant manager of the Atomic Energy Division of the Research and Development Department, Phillips Petroleum Co., has been loaned to the Office of Synthetic Rubber, Reconstruction Finance Corp., to serve as assistant chief of the Plant Operations Division.

L. M. ATWOOD, associated with the Boston Woven Hose & Rubber Co. for the past five years, has been named to the newly-created position of administrative assistant to the director of sales.

W. FRED ANDERSON, previously associated with the B. F. Goodrich Co., has joined the Boston Woven Hose & Rubber Co. as product manager of the Hose Department.

DR. LYMAN J. BRIGGS, former director of the National Bureau of Standards, received the Scientific Apparatus Makers Association award for outstanding achievement at the recent meeting of the organization at White Sulphur Springs, Va.

DR. E. J. CRANE, for the past 39 years editor of *Chemical Abstracts*, has won the Austin M. Patterson Award of the Dayton Section, American Chemical Society, for his excellence in the field of chemical documentation.

EDWIN E. HOKIN and JOHN F. COCORAN have been elected vice-presidents of the Union Asbestos & Rubber Co., Chicago, Ill.

DONAVAN J. GREY, since 1947 comptroller of the L. A. Young Spring and Wire Corp., has been appointed controller of the Wyandotte Chemicals Corp., Wyandotte, Mich.

M. J. ROSS, formerly associated with the Firestone International Co., has been appointed export manager of the Quaker Rubber Corp., division of the H. K. Porter Co.

THOMAS A. MCCOY, factory manager of the Port Neches, Texas, plant of the Naugatuck Chemical Division, U. S. Rubber Co., has been elected chairman of the Sabine Area Chapter, Texas Manufacturers Association.

PAUL A. ROUSH, formerly senior project engineer at the Flexible Tubing Corp., Guilford, Conn., has been named manager in charge of product development.

DR. HERMAN MARK, head of the Division of Polymer Chemistry of the Polytechnic Institute of Brooklyn, has received the 1953 Honor Scroll of the New York Chapter of the American Institute of Chemists.

HERBERT J. REID, formerly production superintendent of the Gilmer belt plant in Philadelphia, Penna., has been named assistant to the production manager of the Mechanical Goods Division of the U. S. Rubber Co.

JOHN W. SPROUL, sales manager of golf balls for the U. S. Rubber Co., has been re-elected president of the Golf Ball Manufacturers Association for one year, from April, 1953, to April, 1954.

CHARLES S. MOHAUPT, associated with the B. F. Goodrich Co. since 1934, has been named acting technical superintendent of the Aeronautical Manufacturing Division of the company.

MAXWELL I. SCHULTZ, executive vice-president of the Technical Tape Corp., has been given the Dr. Herbert W. Hess Memorial Award for 1953 by the alumni of the Wharton School of Finance and Commerce of the University of Pennsylvania. The award is for distinguished achievement in the field of merchandising and marketing.

RALPH K. GOTTSHALL, formerly executive vice-president of the Atlas Powder Co., has been elected president and chairman of the Executive Committee, succeeding Isaac Fogg, who was named chairman of the board and who remains chairman of the Finance Committee.

FINANCIAL NEWS

Goodyear Tire & Rubber Co.

Quarter Ended March 31: Net profit of $11,284,000, which is equal to $2.42 a common share, compared with $7,372,273, or $1.52 a share, in the first quarter of 1952. Net sales in the first quarter of 1953 totaled $303,552,000, 8% more than the $280,844,000 recorded in the first quarter of the previous year. Sales in the first quarter of 1953 established a new high for the firm.

Minnesota Mining & Mfg. Co.

Quarter Ended March 31: Net profit of $4,256,859, which is equal to 53c a common share, compared with $3,740,188, or 47c per common share, in the first three months of 1952. Sales in the first quarter of 1953 totaled $51,062,122, the highest first quarter sales total in the company's history. First quarter sales in 1952 amounted to $43,973,453.

B. F. Goodrich Co.

Quarter Ended March 31: Net income of $8,105,712, which is equal to $1.94 a common share, compared with $6,929,549, or $1.61 a share, in the corresponding quarter of the previous year. Net sales in the first quarter of 1953 totaled $171,175,551, 23.8% more than the $138,248,530 recorded in the first quarter of 1952.

Cooper Tire & Rubber Co.

Quarter Ended March 31: Net profit of $228,832, which is equal to $1.46 a common share, compared with $26,046, or 17c a share, in the first quarter of 1952. Net sales in the first three months of 1953 totaled $6,159,806, against $3,338,997 in the corresponding three months of 1952.

Hewitt-Robins Inc.

Quarter Ended March 31: Net income of $244,313, which is equal to 85c a share, compared with $235,327, or 82c a share, in the corresponding quarter of 1952. Sales for the first quarter of 1953 amounted to $9,325,789, against $9,249,589 for the first quarter of the preceding year.

Servus Rubber Co.

Year to February 28: Net income of $108,600, which is equal to 28c a common share, compared with $141,652, or 37c a share, in the previous fiscal year.

Canadian Tire Corp., Ltd.

For 1952: Net profit of $907,906, which is equal to $8.09 a common share, compared with $527,192, or $4.27 a share, in 1951.

O'Sullivan Rubber Corp.

For 1952: Net income of $175,385, which is equal to 36c a common share, compared with $220,885, or 48c a share, in 1951.

U.S. Rubber Co.

Quarter Ended March 31: Net profit of $7,156,608, which is equal to $1.10 a common share, compared with $6,247,733, or 94c a share, in the first quarter of the preceding year. Net sales in the first quarter of 1953 set a new high of $226,933,883. In the same period of 1952, sales were $220,518,963. The previous high was $222,972,353, in the second quarter of 1952.

Seiberling Rubber Co.

Quarter Ended March 31: Net income of $179,280, compared with $163,332 for the same period of last year, an increase of 9.7%. Net sales in the quarter ended March 31, 1953, totaled $9,407,127, 5.3% more than the $8,932,086 recorded in the quarter ended March 31, 1952.

Rome Cable Corp.

Year Ended March 31: Net income of $2,008,321, which is equal to $4.01 a common share, compared with $1,753,651, or $3.58 a share, in the year ended March 31, 1952. Net sales in the year ended March 31, 1953, totaled $54,632,976, against $42,657,848 in the previous year.

Circle Wire & Cable Corp.

Quarter Ended March 31: Net profit of $667,567, which is equal to 89c a share, compared with $536,051, or 72c a share, in the corresponding quarter of the previous year. Net sales in the first quarter of 1953 totaled $7,367,770, against $5,296,691 in the first quarter of 1952.

Goodall Rubber Co.

Quarter Ended March 31: Net income of $48,604, which is equal to 40c a common share on net sales of $2,064,975, compared with $66,132, or 58c a share, on sales of $2,376,848 in the first quarter of the previous year.

Great American Industries, Inc.

For 1952: Net income of $2,054,891, which is equal to $1.66 a common share, compared with $854,482, or 69c a share, in 1951. Net sales in 1952 totaled $20,344,596, against $13,226,133 in the preceding year.

General Tire & Rubber Co.

Quarter Ended February 28: Net income of $1,509,786, which is equal to $1.18 a share on net sales of $44,130,274. Comparative figures for the like period of the preceding year are not available.

Anaconda Wire & Cable Co.

Quarter Ended March 31: Net profit of $1,921,922, which is equal to $2.28 a common share, compared with $1,607,273, or $1.90 a share, in the corresponding quarter of the preceding year.

Brunswicke-Balke-Collender Co.

Quarter Ended March 31: Net loss of $391,498, compared with a net loss of $270,184 in the corresponding period of 1952. Consolidated sales in the first quarter of 1953 were $5,681,181, 44% higher than the $3,942,857 recorded in the first quarter of the preceding year.

Interchemical Corp.

Quarter Ended March 31: Net profit of $630,138, which is equal to 82c a common share, compared with $430,428, or 62c a share, in the first quarter of the previous year. Sales in the first quarter of 1953 totaled $23,735,104, against $21,365,649 in the first quarter of 1952.

U. S. Rubber Reclaiming Co.

Twelve Weeks to March 29: Net profit of $76,874, which is equal to 62c a common share, compared with $48,454, or 39c a share, in the same period of the previous year.

United Carbon Co.

Quarter Ended March 31: Net income of $1,005,909, which is equal to $1.26 a share, compared with $896,097, or $1.13 a share, in the corresponding quarter of 1952.

Philip Carey Mfg. Co.

Quarter Ended March 31: Net profit of $337,483, which is equal to 40c a common share, compared with $332,137, or 39c a share, in the same quarter of 1952.

Raybestos-Manhattan, Inc.

Quarter Ended March 31: Net income of $925,442, which is equal to $1.47 a share, compared with $919,994, or also $1.47 a share, in the first quarter of 1952.

Automotive Fibres, Inc.

Quarter Ended March 31: Net profit of $1,046,333, which is equal to $1.05 a share, compared with $403,926, or 41c a share, in the first quarter of the preceding year.

Union Asbestos & Rubber Co.

For 1952: Net profit of $617,236, which is equal to $1.30 a common share, compared with $773,807, or $1.36 a share in 1951.

Pantasote Company

For 1952: Net loss of $173,931, compared with a net loss of $284,721 in the preceding year.

Offering Mansfield Tire Shares

A. G. Becker & Co., Inc., New York, N. Y., and associates are offering 200,000 shares of Mansfield Tire & Rubber Co. common stock at $15 a share. The stock represents holdings of General Tire & Rubber Co. General Tire is selling its 49,066 other shares of Mansfield common to Mansfield management personnel who are also buying another 11,466 shares from a General Tire dealer.

Norton Elected President

Victor T. Norton

Victor T. Norton has been elected president of the American Hard Rubber Co., New York, N. Y., succeeding Frank D. Hendrickson, who has retired. Mr. Norton was formerly administrative vice-president of the National Broadcasting Co. He has held top executive positions with several nationally known companies. He began his business career in 1927 as a salesman for the Jewel Tea Co., where he held various executive positions including that of assistant to the president. He joined the Cudahy Packing Co. as director of research and was subsequently general sales manager, vice-president and plant manager at Los Angeles and vice-president in charge of sales and merchandising. Mr. Norton was also associated with the American Home Products Corp. as a member of its Operating Committee and president of American Home Foods, Inc. Mr. Hendrickson has retired after thirty years active service with the company, of which he had been president for the past eleven years. He will continue to serve as a director and as a consultant to the company on a part-time basis.

Manhattan Opens New Roll Plant

Manhattan Rubber Division of Raybestos-Manhattan, Inc., has opened a new roll covering plant at Neenah, Wisc. The new plant expands existing facilities for rubber covering rolls for the paper and other industries in the midwest. The new single story plant is laid out for straight-line production with a modern materials handling system and specially built machinery to handle the largest size rolls. Its location on a large tract of land permits expansion to meet all foreseeable needs of the paper industry.

Calvin Estate $291,725

The estate of the late Edwin Calvin, Sr., former chairman of the Bearfoot Sole Co. of Wadsworth, Ohio, has been appraised at $291,725. Mr. Calvin died on January 6 in a hospital in Cleveland, Ohio. Chief items in the inventory are stocks and securities valued at $227,254 and real estate valued at $48,000. The first National Bank of Akron is executor of the estate.

Scrap Rubber Group Changes Name

On May 15, the name of the Scrap Rubber Institute of the National Association of Waste Material Dealers, Inc., changed its name to the Scrap Rubber and Plastics Institute. The inclusion of the material now opens a new phase of activitiy for NAWMD. Henceforth, plastics will receive every attention by all phases of the NAWMD operation, and whenever possible, future Association meetings will include discussions on plastics scrap. The new Scrap Rubber and Plastics Institute, as well as NAWMD's headquarters staff and Washington office will be in contact with officials throughout the plastics industry to bring Association members interested in this commodity the most advanced knowledge of activity within that industry. The officers of the Scrap Rubber Institute, who will now continue as officials of the Scrap Rubber and Plastics Institute, are: Milton Kushkin (A. Schulman), president; Samuel Tanney (Tanney-Costello), vice-president, and George W. Reid (NAWMD), acting secretary-treasurer.

Giffels & Vallet Name Pike

Giffels & Vallet, Inc. L. Rosetti, Detroit, Mich., has announced appointment of Dr. Edwin Frederic Pike as director of its Chemical Engineering Department. Dr. Pike takes over his new position following completion of a survey on the chemical potentials of Ireland for the government of that country. His business experience during the past 27 years has been marked by executive positions and consultation services for Wallace Clark & Co., Smidas Co., American Home Products Corp., Gelatin Products Corp., Armour & Co., E. A. Staley Manufacturing Co., and the Kieckhefer Container Co. He received his doctorate in chemical engineering from the University of Pennsylvania in 1924, following the degrees of M. S. and B. S. from the same institution. His professional societies include Sigma Xi, Tau Beta Pi, Alpha Chi Sigma, and American Chemical Society and the American Institute of Chemical Engineers.

Increasing Coated Fabric Output

As part of a greatly accelerated program to step up production of coated fabrics, U. S. Rubber Co. has purchased one of the country's largest, modern vinyl calenders and auxiliary equipment. It will make possible greatly increased production of Elastic Naugahyde plastic upholstery. The 28 by 66 inch four-roll calender and auxiliary equipment will be installed in the company's Mishawaka, Ind., plant, where the vinyl upholstery was developed and is already being produced in large quantities.

Pliolite S-5 Now Pliolite S-5A

Effective April 15, 1953, the Chemical Division of the Goodyear Tire & Rubber Co. changed the name of Pliolite S-5 to Pliolite S-5A. The change represents only a simplification of nomenclature. There has been no alteration either in the quality or the price of the resin.

Cullen Joins Marbon Corp.

Joseph G. Cullen

Joseph G. Cullen, formerly purchasing agent and assistant to the president of the Beebe Rubber Co., has been named technical sales representative in the New England area by the Marbon Corp., Gary, Ind. Mr. Cullen has served on advisory committees for the Elastic Colloid Corp. and the Rubber Heel and Sole Institute. He is a member of the Boston and Rhode Island Rubber Groups.

U. S. Wire & Cable Moves

U. S. Wire & Cable Corp., has moved into a new, modern plant at Progress Ave. and Monroe St., Union, N. J., according to A. J. Sequeria, president of the firm. The company was formerly located at 27 Haynes Ave., in Newark, N. J. The new plant, with glass brick exterior, will permit U. S. Wire & Cable to triple its production. Mr. Sequeria stated that the firm would continue its heavy schedule of production for the government as well as expand its commercial wire output to better serve the trade.

Pittsburgh Coke Names Esselen

Gustavus J. Esselen III, has been appointed New York sales representative for the Plasticizer Division of the Pittsburgh Coke & Chemical Co., Pittsburgh, Penna. Mr. Esselen was formerly employed by the U.S. Testing Co., Inc. of Hoboken, New Jersey, in a sales and administrative capacity. In his new position, he will be serving plastics manufacturers in New York and northern New Jersey, with headquarters in the Empire State Building, New York, N. Y.

Seeking American Representation

The firm of Recoger, Limitada, Rua S. Paulo, 120-124, Lisbon, Portugal, is seeking a representative in the United States for its line of granulated cork which finds wide use in the rubber industry. The company is interested in appointing one or more representatives in this country, preferably with facilities for stocking quantities of the material. Interested companies or persons may address their inquiries to the company at Lisbon for additional information.

RISING RUBBER CONSUMPTION CITED BY NEWMAN IN ADDRESS

Improvement of the standard of living of a country can be closely linked with the rising per capita consumption of rubber, was the observation made in Seattle, Wash., recently by James J. Newman, vice-president of the B. F. Goodrich Co., Akron, Ohio. Speaking to an audience of more than 500 at the Olympic Hotel at a dinner commemorating the opening of new Goodrich Pacific Northwest headquarters at 1 Hanford street, the rubber executive stated that in America today, rubber consumption is at the rate of 17.8 pounds per person, while the average for the rest of the world is about 1 pound per person. Fifty years or so ago, before the highly industrialized era of the automobile, rubber consumption in the United States was .6 pounds per person.

During 1953 it is estimated the United States will consume approximately 1,330,000 long tons of rubber—more than one million tons of which could be made in this country in our own synthetic rubber plants. Goodrich estimates are that this country will actually use about 800,000 tons of synthetic rubber.

In citing how rubber manufacture and consumption has kept pace with the American economy, Mr. Newman pointed out that passenger car registrations in the United States have increased almost five times in the past 30 years—from 9,000,000 in 1920 to almost 44,000,000 in 1952. By 1960 it is estimated they will reach 54,000,000, representing a growth from 1 passenger car per each 12 persons in the U. S. in 1920 to 1 car per each 3¼ persons in 1960. Truck registrations in the same period have climbed from 1,000,000 in 1920 to 9,500,000 in 1952 and an estimated 11,500,000 by 1960.

These expectancies of future tire requirements up to 1960 are based on the premise that tire quality and tire mileage will improve about 2½% per year, or at about the average rate of improvement as in the past. Tire production has actually increased at a lower rate than car registrations because of improvements in product. The figure in 1920 was 29,000,000 passenge tires and 75,000,000 in 1952. By 1960 the figure is estimated at 95,000,000.

Mr. Newman placed special emphasis on the need for correction of the nation's inadequate highway facilities, a fundamental requirement to maintaining a high economic level of prosperity. The Goodrich executive also predicted that consumer purchases must be stimulated through the development of new and better products at lower prices, and industry must equip itself with production facilities capable of providing these products.

Shanco Names Wyrough & Loser

Shanco Plastics & Chemicals, Inc. of Tonawanda, N. Y., has named Wyrough and Loser, Trenton, N. J., as sales agents to the rubber industry in the Middle Atlantic states and New England. Shanco manufactures a line of thermosetting phenol-formaldehyde resins known as "Shanco Process Resins" among which are included rubber additives.

Goodwin Chemical Co. Formed

Goodwin Bangsberg

Goodwin Bangsberg, formerly associated with the Witco Chemical Co., has formed his own concern, the Goodwin Chemical Co., at 19 James St., Brookline 46, Mass. The new firm will handle chemicals and colors in the New England area. Mr. Bangsberg had been with Witco from 1944 until May 1 of this year. From 1942 to 1944, he served with the War Production Board in Washington, D. C. In the previous eleven years, he was associated with Stanley Doggett, Inc. His first position was with the Wishnick-Tumpeer Co., predecessor of the Witco Chemical Co. Goodwin Chemical will represent Stanley Doggett, Inc., on colors and will add other products to its line in the future. The telephone number of the new firm is Aspinwall 7-7434.

Rubber Quality Bulletin

As an outgrowth of the Crude Rubber Quality Seminars conducted by the Crude Rubber Committee of the Rubber Manufacturers Association in 1952, a new bulletin is now being published by the association. The broad purpose of the bulletin is to report from time to time on events in rubber—natural and synthetic rubbers alike. A specific objective will be to keep consumers posted on the progress of the committee's campaign to win universal acceptance of the crude rubber quality and packing standards defined in the seminars and in the official RMA Type Descriptions and Packing Specifications. Volume I, Number 1, of the "Rubber Quality Bulletin" covers major developments in these fields since December, 1952, when the quality seminars were concluded.

Stephens Elected Vice-President

Election of Dr. H. N. Stephens as vice-president in charge of central research has been announced by the Minnesota Mining & Manufacturing Co., St. Paul, Minn. Dr. Stephens has been in charge of the central research laboratory since 1937. From 1927 to 1937, while an assistant professor of chemistry at the University of Minnesota, has was a research consultant to Minnesota Mining.

TARIFF COMMISSION REPORTS ON SYNTHETIC PRODUCTION IN 1952

Total production of all types of elastomers in 1952 was 1,889,000,000 pounds, a decrease of 5.7% from the record of 2,003,000,000 pounds established in 1951, according to preliminary statistics of the United States Tariff Commission. Sales of elastomers were 2,003,000,000 pounds, valued at $549,000,000, exceeding sales in 1951 by 175,000,000 pounds.

Output of cyclic elastomers in 1952, consisting entirely of the polybutadiene-styrene type, was 1,394,000,000 pounds, a decline of 10.7% from the 1,561,000,000 pounds reported for 1951. Production of this type of elastomer is almost entirely by government-owned plants and is used chiefly in the manufacture of passenger car tires. Sales of GR-S in 1952 were 1,514,000,000 pounds valued at $361,000,000 compared with 1,406,000,000 pounds, valued at $352,000,000 in 1951. In 1952, GR-S accounted for 75% of the production of all synthetic rubbers.

Production in 1952 of acyclic elastomers, consisting of special purpose types such as polybutadiene-acrylonitrile, polyisobutylene-isoprene, polychloroprene, and polyvinyl types, amounted to 495,000,000 pounds, compared with production of 442,000,000 pounds in 1951, an increase of 12%. Sales in 1952 were 489,000,000 pounds, valued at $187,000,000 compared with sales of 422,000,000 pounds, valued at $163,000,000 in the previous year.

The acyclic elastomer produced in the largest volume in 1952, as in previous years, was the polyisobutylene-isoprene (GR-I or Butyl) type. This type of elastomer is used principally in the manufacture of inner tubes for automobile and truck tires. Production of GR-I in 1952 amounted to 178,000,000 pounds, or 36% of the total output of all acyclic elastomers in that year.

Must Resign One Directorship

Sidney J. Weinberg, a director of the B. F. Goodrich Co. and Sears, Roebuck & Co., must resign either or both posts according to a recent ruling handed down in United States District Court in New York. The government had charged in its suit against the two corporations and Mr. Weinberg that Mr. Weinberg's position with the two firms was in violation of the anti-trust laws. The court ruled that "Since Sears and Goodrich are competitors, since a price fixing or division of territory would eliminate competition between them, and since such an agreement would per se violate at least one of the provisions of the anti-trust laws," Mr. Weinberg is forbidden to be a director of both corporations. The court, stating that the government has made no charge that such an agreement had been made or considered, added, "a director serving in a dual capacity, might, if he felt the interest of an interlocking corporation so required, either initiate or support a course of action resulting in price fixing or division of territories or a combination of his competing corporations as against a third competitive corporation."

Newman Retires From Goodrich

James J. Newman

Retirement of James J. Newman, vice-president of the B. F. Goodrich Co., on July 1, 1953 was announced with "sincere regret" on June 1 by John L. Collyer, president of the company. Mr. Collyer pointed out that Mr. Newman has served with distinction in the position of vice-president of the company for 20 years. Mr. Newman, who decided last year to elect early retirement, joined Goodrich in 1931 as assistant to the president. He was elected a vice-president two years later and has played an important role in all phases of the company's operations. In addition, he has served on many industry and government committees. During World War II and the Korean conflict, while government controls were in effect, Mr. Newman was a leading figure in representing the rubber industry to the government. Mr. Newman is a member and former chairman of the Inter-Industry Highway Safety Committee and a director of the Rubber Manufacturers Association. He is a trustee of the Automotive Safety Foundation and a member of its operating committee. In 1951, he served as an industry advisor to the U. S. State Department in meetings of the International Rubber Study Group at Rome, Italy, and in 1936 represented the rubber manufacturing industry of the United States at a meeting of the International Rubber Regulation Group in London. He was born in Brooklyn, N. Y., and is a graduate of New York University.

Opens Colombian Subsidiary

Pioneer Latex & Chemical Co. of Middlesex, N. J. has announced the establishment of a subsidiary in Colombia which will manufacture latex compounds, mastic flooring, industrial asphalt emulsions and other maintenance and construction specialties. The newly-created company, Placco de Colombia, Ltda., will occupy a 10,000 square foot building which will operate under the supervision of H. L. Goodemote, formerly assistant manager at Pioneer Latex's Middlesex plant. Sales manager will be Octavio Trujillo. The affiliate will be located near the city of Cali in Colombia's Valle del Cuaca region near the Pacific Coast.

Minnesota Mining Promotes Three

Promotion of three members of its Central Research Department has been announced by the Minnesota Mining & Manufacturing Co. Dr. Matthew W. Miller has been named business manager and Dr. Alvin M. Borders and Dr. Harold M. Scholberg have been named associate directors of the department. Dr. Miller joined 3M as a research chemist in 1947. His most recent position has been as an assistant director of the department. He received his doctorate from the University of Illinois in 1940. Dr. Scholberg will head the Physics, Inorganic Chemistry and Physical Chemistry Section of the Central Research Department. He joined 3M as a senior chemist in 1944 and was made leader of the Electrochemical Section in 1948. In 1951, he was named assistant director of central research. He received his doctor's degree from the University of Chicago in 1938. Dr. Borders received his doctorate from the University of Indiana in 1937. For ten years he was engaged in synthetic rubber research with the Goodyear Tire & Rubber Co. He did research work with the Institute of Paper Chemistry from 1948 until 1950 when he joined 3M. He was named a section leader of the Central Research Department in 1951.

Alliance Celebrates First Year

At a news conference in New York City marking the end of the first year's operation of the Alliance Tire & Rubber Co., Ltd., Hadera, Israel, Arthur Taubman, president of the company, stated the new firm had not only measured up to original production estimates but exceeded even the most optimistic forecasts. The firm was dedicated in April, 1952, and began complete start-to-finish tire and tube production last September. By January, 1953, operations had emerged from the red and were showing a substantial profit At the close of the company's fiscal year, March 31, 1953, the company reported that it now has a backlog of orders of approximately $400,000. The Israeli Army, after tests against imported competitive makes, has chosen Alliance tires and tubes exclusively. A contract is also being negotiated to supply a leading Israeli auto maker with all tires and tubes to be used on its locally produced cars. This will call for an initial consumption of 25,000 passenger tires annually.

Wilson Named Sales Director

Pennsylvania Industrial Chemical Corp., Clairton, Penna., has announced the appointment of Jack L. Wilson as director of sales. He will continue to serve as assistant to the president. Mr. Wilson has been associated with the company for five years as assistant to the vice-president and assistant to the president. He is a graduate of Mercersburg Academy and Carnegie Institute of Technology, and also did post graduate work at the University of Pittsburgh. Prior to joining Pennsylvania Industrial, he did engineering design work on heat transfer equipment. During World War II he spent four years in the U. S. Navy, serving as an Ordnance Lieutenant.

Witco Chemical Promotes Grubb

Charles W. Grubb

Witco Chemical Co., New York, N. Y., has appointed Charles W. Grubb to the position of sales manager for the New England states, with headquarters in Boston, Mass. Mr. Grubb, who has been a sales representative in the Boston office for the past three years, succeeds Goodwin Bangsberg, who recently formed his own company. Mr. Grubb specialized in business and chemistry at Rutgers and Boston Universities after serving three years in the Army ski troops. Mr. Grubb is a member of the Boston Rubber Group, the Rhode Island Rubber Group and the New England Paint, Varnish and Lacquer Association.

Form Davis-Standard Sales Corp.

On June 1st, the newly formed Davis-Standard Sales Corp. of Mystic, Conn. assumed the exclusive marketing of Davis-Standard Extruders and Standard Molding Presses. Both the presses and the extruding machines are manufactured by the Standard Machinery Co. of Mystic. Standard Machinery, a 105 year old company, first began making molding presses in 1936, and today there are more than 1500 compression and transfer presses in service throughout this country and abroad. More recently they have added their line of Davis-Standard extruding machines which are now in use with many of the major wire and cable companies. Standard molding presses were formerly sold through the F. J. Stokes Co. of Philadelphia, Penna., under the name of Stokes Standard Molding Presses. These presses and parts will now be available directly from Standard Machinery through Davis-Standard. Under the new marketing management, the Davis-Standard Sales Corp. will assist molding and extruding companies to achieve the best possible production, with the problems of users receiving first-hand attention.

Thiokol Corp. Changes Name

Thiokol Corp., Trenton, N. J., has changed its name to the Thiokol Chemical Corp. No change other than name is involved. Personnel and policies remain the same.

Buetow Elected 3M President

Herbert P. Buetow

Herbert P. Buetow, formerly executive vice-president in charge of finance of the Minnesota Mining & Manufacturing Co. of St. Paul, Minn., has been elected president succeeding Richard P. Carlton who was named vice-chairman of the Executive Committee. Mr. Buetow joined Minnesota Mining in 1926 and became controller in 1935. He was made treasurer and a director of the company in 1939 and has been an executive vice-president since 1949. A native of St. Paul, Mr. Buetow is a former vice-president of the Controllers Institute of America and a former trustee of the Controllership Foundation. Mr. Carlton will continue as a member of the board of directors and of the Finance Committee in addition to serving as vice-chairman of the Executive Committee. He has been president of Minnesota Mining since 1949, and first joined the company in 1921 as a laboratory assistant. He was elected a vice-president and a director of the company in 1929 and became executive vice-president in charge of manufacturing, engineering and research in 1948.

Nix Estate is $135,964

The late Karl W. V. Nix, so-called "mystery man" of the rubber industry, left an estate which has been appraised at $139,964, according to a report filed in Probate Court in Akron. Personal effects were valued at $5,717; stocks and securities, $121,586 and accounts receivable, $10,296. Mr. Nix, who was 48, shot himself at his home last November. He dealt extensively in rubber and rubber manufacturing supplies on an international basis with his operations reaching into the Far East.

Tracerlab Opens Branch Offices

Tracerlab, Inc., Boston, Mass., has announced the opening of two new branch offices, one in Cleveland, Ohio, and the other in Atlanta, Ga. The Atlanta office at 1844 Stanton Road, East Point, and the Cleveland office at 4614 Prospect Ave., will serve the rubber, plastics and light metal industries. Keith Elrod is in charge of the Atlanta office and William A. McCarthy is in charge of the Cleveland office.

Rubber Division Chicago Meeting

The third meeting of the 1953 season of the Division of Rubber Chemistry of the American Chemical Society will be held on September 9, 10 and 11 at the Hotel Sherman in Chicago, Ill. The meeting will be held in conjunction with a meeting of the parent society. June 26 has been set as the deadline for abstracts of papers to be presented at the meeting. Abstracts should be of about 200 words and should be submitted in triplicate to the secretary, C. R. Haynes, Binney & Smith Co., 41 E. 42nd St., New York 17, N. Y. The letter of transmittal should state the laboratory in which the work was done, who will deliver the paper, and the time required for presentation. Three copies of the finished paper are to be handed to the secretary at the meeting. Herman Boxser (Western Felt Works) has been named chairman of the Local Arrangements Committee. There will also be a regular meeting of the 25 Year Club under the chairmanship of Dr. H. A. Winkelmann (Dryden Rubber). Charles M. Baldwin (United Carbon) will be in charge of the Suppliers' Cocktail Party. The usual banquet will also be held at the meeting.

Goodyear Expansion Program

This year, the Goodyear Tire & Rubber Co. will invest approximately $5,500,000 in plant expansions to meet the growing demand for the company's chemical products. The expansion program includes an addition to the Chemigum plant in Akron to cost approximately $1,500,000. This will provide for increased production of Pliolite S-5A, paint latex and Chemigum rubber. Also planned is a new plant and additional equipment at Niagara Falls, N. Y., to cost approximately $4,000,000. This will provide for the production of the Goodyear accelerators "Captax" and "Altax"; the antioxidant "Wingstay S" and vinyl plastic resins. Ground has already been broken for the Akron plant addition. Construction work on the Niagara Falls addition is expected to get under way early this summer. Four new factory units will comprise the Niagara Falls construction program. They will be constructed on a ten-acre site adjoining the company's present Pathfinder Chemical Corp. plant.

Gregory Joins Bacon Laboratories

Frederick S. Bacon and Philip D. Wilkinson have announced that John B. Gregory has joined them as partners in the Frederick S. Bacon Laboratories of Watertown, Mass. During the war, Mr. Gregory was a Sections Chief in the Chemical Warfare Service Development Laboratories at the Massachusetts Institute of Technology and for the past seven years has been in charge of the Rubber and Plastics Division of the Bacon Laboratories. A graduate of Dartmouth College, Mr. Gregory currently is director of the Elastomers and Plastics Group of the Northeastern Section of the American Chemical Society and also is chairman of the Varnish Committee of the New England Paint and Varnish Production Club.

Trechter Joins Harwick Standard

Harry A. Trechter

Harry A. Trechter, formerly associated with the Gates Rubber Co., has been named a technical sales representative by the Harwick Standard Chemical Co. in the Los Angeles, Calif., area. Mr. Trechter was associated with Gates Rubber for nine years, serving in the Purchasing Department. During World War II, Mr. Trechter served as a Cavalry officer and was with General Mills in an administrative capacity before joining the armed forces. He is a graduate chemist and a member of the American Chemical Society and the Los Angeles Rubber Group.

Coated Products Division Sold

A group of investors headed by David Berdon, Jay Levine and Thomas L. Kaplin, has acquired the Coated Products Division of the Interchemical Corp., New York, N. Y. The transfer included the division's plant at Buchanan, N. Y. The business will be carried on by a new company named Standard Coated Products, Inc. Present plans, include expanding activity in the wall covering field and intensification of development work in this and other fields. The divisional management continues under the new ownership. Mell Daniel, formerly divisional president, continues in that capacity for the new firm. Four former divisional vice-presidents are also with the new firm. They are: John A. Bessler, in charge of industrial and government sales; David Douglas, in charge of "Sanitas" styling and merchandising; Carl M. Parker, plant manager; and Edgar S. Thompson, in charge of research. A. D. Wessling continues as advertising manager.

Goodrich Chemical Plans Plant

B. F. Goodrich Chemical Co. has announced plans for the construction of a new $8,500,000 plant for the production of acrylonitrile at Calvert City, Ky. The plant is scheduled to start operations in the fall of 1954. The new facilities will be the company's second plant at Calvert City, the first being a recently opened chloride monomer plant. Ground for the new plant will be broken soon on a tract already owned by the company and adjacent to its vinyl chloride unit.

LOS ANGELES NEWS

B. F. Goodrich Co. recently celebrated twenty-five years of manufacturing activity on the West Coast in special ceremonies at the Los Angeles plant. Aiding in the celebration were 70 employees who joined Goodrich in 1928. Among them was James F. Sweatt, plant manager, who started as a factory employee.

Goodrich has reported that it has almost completed a $2,000,000 building and equipment expansion program that will increase tire and tube production capacity at the Los Angeles plant by at least 20%. The expansion program, begun June, 1952, is being finished now with the installation of new tire vulcanizers and a bigger and better equipped cafeteria. A total of 251,000 square feet of buildings added to the plant in the last two years, enlarging it by one-third, has also resulted in a new machine shop, a 77,000 square foot warehouse section and a relocated and modernized tube manufacturing department.

Fire leveled three large buildings of the American Latex Products Corp. at Hawthorne, Calif., on May 10, causing damage estimated at $500,000. Destroyed were two manufacturing units and a warehouse. Firemen averted spread of the blaze to ten other large structures on the premises. Two employees said that the fire flared up suddenly from a cutting aand shaping machine. A skeleton maintenance crew in the factory escaped as flames spread rapidly. Clowes Christy, president of the company, said that the fire had swept through at least 20,000 square feet of floor space.

A $2,500,000 factory is to be constructed on a 10-acre tract at Garfield and Rosencrans Ave. in Los Angeles by the Midwest Rubber Reclaiming Co. of East St. Louis, Ill. Construction has already begun with completion scheduled for next January.

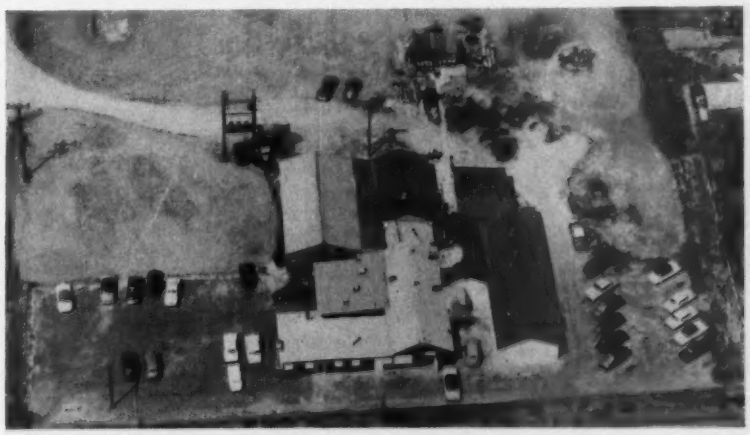
Stoner Rubber Co. of Anaheim, Calif., recently completed an expansion program that more than doubled the concern's facilities. Founded in 1939 with some 4,000 square feet of floor space and 25 employees, the company now utilizes 20,000 square feet of floor space and employs over 135 persons.

In the early days of its existence, the company manufactured rubber sporting goods such as decoys, and stamped washers. With the coming of World War II, the firm turned to defense work and soon was engaged 100% in the manufacture of molded rubber parts for the U. S. Army Air Corps and the Naval Air arm. At this time the company had 95 employees.

The post-war disarmament program again reduced the number of employees to twenty-five, and the company looked to the commercial aviation industry and the oil well tool and refining industry and other new markets. Plans were made for expansion of buildings and more machinery and equipment were procured with the result that the company began to grow once again.

Privately owned by N. S. Von Rohr, the Stoner Rubber Co. was incorporated in July, 1952. The officers are: *President,* N. S. Von Rohr; *Vice-President,* Tilbert A. Reynolds; *Secretary,* Herschel B. Green; *Treasurer,* F. Whittle.

An interesting story is told of Mr. Von Rohr, which accounts in some measure for the success of his company. On the way to the plant each day, he passed an Army hospital. Out in front of the hospital there were always a number of servicemen affected by paraplegia. One day he stopped and talked to a group of these men. Two weeks later, he arranged for a specially devised truck to take a number of them to work at the plant. Of the original group, seven are still employed at the company, working from their wheel chairs.



This air view of the plant of the Stoner Rubber Co. at Anaheim, Calif., shows the recent growth of the company. The black-roofed center building is the firm's original quarters.

Charles P. Evans

Charles P. Evans, formerly works manager of the Arrowhead Rubber Co., a subsidiary of the National Motor Bearing Co. at Downey, Calif., has been elected a vice-president of Arrowhead. Prior to joining the firm in 1952, Mr. Evans spent nineteen years with the Firestone Tire & Rubber Co. He is a graduate of Georgia Technological Institute.

Chet Froude

Arrowhead Rubber has also announced the election of Chet Froude as vice-president. Mr. Froude is general manager of the company's plant in Long Beach, Calif. He entered the National Motor Bearing organization in 1950 after several years with the Jantzen Knitting Mills as manager of European factories and sales.

American Polymer Plans New Plant

American Polymer Corp. of Peabody, Mass., has announced that it will build a new plant on a railroad siding in Peabody, following a recent explosion and fire at its home plant there. The projected plant will be larger and with added facilities, it was said. In the meantime, the company is serving its customers from its other plants in Leominster, Mass., Illiopolis, Ill., and Toronto, Ont., Canada.

CANADIAN NEWS

C. C. Thackray, president of the Dominion Rubber Co., Ltd., in a recent address before the annual meeting of the Rubber Association of Canada, stated that industry production may reach a new high in 1953. He also predicted increased competition in the rubber industry because of the rapidly expanding applications of rubber. He termed excise taxes on tires and tubes an "economic absurdity" and reported that the rubber industry is faced with increased competition from the United States and other sources.

Evidence is available, he said, to show that buyers were purchasing large quantities of canvas footwear from Hong Kong for delivery in Canada this year.

Greig B. Smith, secretary of the association, reported that more synthetic and less natural rubber was used in Canada in 1952. Total sales in the Canadian market increased 9% over 1951, but exports dropped to $17,690,727 from $29,067,215. The decline in exports is continuing, he observed.

Mr. Smith pointed out that long-standing influences on the export market include dollar curbs in the sterling area, continued expansion of rubber manufacturing in markets previously supplied from Canada and competition from cheap Asiatic and European goods. The removal of restrictions on rubber consumption in the United States and the rise in value of the Canadian dollar also hampered export business, he reported.

R. C. Berkinshaw, president and general manager of the Goodyear Tire & Rubber Co. of Canada, was elected president of the Rubber Association of Canada, succeeding Mr. Thackray. W. H. Funston, president and general manager of the Firestone Tire & Rubber Co. of Canada, was elected vice-president, while J. R. Belton, vice-president and manager of Gutta Percha and Rubber, Ltd., was elected treasurer. Greig B. Smith was elected secretary and assistant treasurer.

Directors elected include Mr. Berkinshaw, Mr. Funston, Mr. Belton, Mr. Thackray, J. P. Anderson, M. L. Brown, John W. H. Miner, J. D. Morgan and I. G. Needles.

The Dunlop Tire & Rubber Goods Co., Ltd., has reported a decrease of 29% in its net profit for 1952 as compared with 1951. Net profit in 1952 was $315,083, which is equal to $3.98 a common share, compared with $446,871, or $5.18 a share, in 1951. Sales in 1952 were the highest in the company's history.

To help meet the needs of the rapidly expanding Canadian industrial economy, the Shell Oil Co. of Canada, Ltd., recently put on stream at Montreal East a new chemical plant with an annual capacity of 20,000,000 pounds of isopropyl alcohol and acetone. The isopropyl alcohol is the first to be manufactured in Canada and the acetone is the first to be manufactured in Canada from petroleum raw materials. The plant represents an additional North American source of these solvents. The plant draws its feed stock from the company's Montreal East refinery. It includes special features which permit operation in temperatures as low as —20° F.

John R. Burkett, formerly assistant to the manager of dyestuff sales for the Calco Chemical Division of the American Cyanamid Co., has been named to manage the business of the Calco Chemical Division in Canada, North American Cyanamid, Ltd. Mr. Burkett received his B.S. in chemical engineering from Iowa State College in 1935. He joined Calco as a student trainee, serving in the Production, Purchasing and Sales Departments and since 1946, as assistant to the manager of the Dyestuff Department. He is a member of the Chemists Club, New York City.

Goodyear Tire & Rubber Co. of Canada, Ltd., has signed a contract for the construction of a new warehouse in Windsor, Ont. Company officials said the new warehouse with its 19,000 square feet will be twice the size of the former warehouse which was recently sold to the city for a civic project. The cost of the new warehouse is estimated at $175,000.

What is said to be the world's first plant for the manufacture of phenol from air and oil was formally dedicated on May 27 in Montreal East by the Hercules Powder Co. and B. A. Shawinigan, Ltd. The new plant is owned and will be operated by Shawinigan under license from Hercules and the Distillers Co., Ltd. of England. The plant is designed around a process developed by Hercules on the oxidation of terpenes, para-cymene and cumene.

Polychemicals Sales Revamped

The sales development and service organization of the Polychemicals Department, E. I. du Pont de Nemours & Co., Inc., has been revamped in anticipation of greater customer requirements for technical assistance, notably in the plastics industry. In making the change, responsibility for technical service was separated from that of new products and applications development and an assistant manager placed in charge of each, P. Willard Crane, head of the department's Development and Service Section said. Henry M. Cadot, assistant section manager, was given primary responsibility for sales development, and Herbert S. Lecky, formerly a superintendent of the Sabine River Works near Orange, Texas, was named the new assistant manager for sales service. The sales service laboratory was placed in charge of D. B. Hanson, formerly a product specialist for the section.

Develops Chemical Activator

A new chemical activator which, it is claimed, will reduce the manufacturing costs of GR-S cold rubber, speed up its production and make a more uniform product, has been developed by the Naugatuck Chemical Division of the U. S. Rubber Co., in connection with the rubber research program sponsored by the Reconstruction Finance Corporation. Naugatuck scientists believe that the widespread use of the new activator, a sulfoxylate derivative, can result in a saving of approximately $700,000 annually for the synthetic rubber industry. Pilot plant tests have shown that it simplifies cold rubber production and improves uniformity of operation as well as uniformity of the rubber. It can be used in recipes for cold latex as well as in recipes for solid cold rubber. It is said to give latex better color and makes it more fluid for easier handling. Laboratory tests indicate that the rubber may have better aging characteristics than present types due to low iron content.

An initial production of around 600,000 pounds of cold GR-S with the new activator has been authorized by RFC in two government owned synthetic rubber plants. The Port Neches, Texas plant operated by U. S. Rubber and the Baton Rouge, La., plant operated by the Copolymer Corp., will make this new rubber which has been designated as X-750 by RFC. The rubber will be used in tires, mechanical goods and other rubber products.

Firestone Introduces New Tire

A completely new tire introduced by the Firestone Tire & Rubber Co. highlighted the 37th running of the famed 500-mile Memorial Day Racing Classic at Indianapolis, Ind., this year. The new 1953 tires are larger in cross section but have practically the same outside diameter as the older type tire which they replaced. Increase of cross section of the tire made possible the increase of tread width by approximately 1½ inches. This provides much greater rubber-to-road contact which greatly improved controllability and increases traction, the company stated. For the first time, contoured front tires have been developed as companion tires to the new rears. The new rear tires with improved handling and "bite" cause greater thrust, particularly on the right front tires, and, to offset the increased wear, the companion contoured front tires were introduced for the 1953 race. The new front tires had the same tread design features as the rears, a wider cross section, wider tread area, high contoured shoulder and were fitted with wider rims. The new tires were supplied in 7.10-16 and 7.10-18 sizes to operate on the wider 5.50 rims.

Hershberg Firm Changes Name

Hershberg Products Co., Inc. of Ashtabula, Ohio, has changed its name to Hershberg Rubber Products Co., Inc. The change in name was made only to indicate clearly the nature of the products manufactured by the company. Personnel and policies remain the same.

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OBITUARIES

Anthony J. Math

Anthony J. Math, chairman of the board and president of Sinclair & Valentine Co., New York, N. Y., died on May 13 in St. Claire's Hospital in New York after a brief illness. He was 53 years old. Born in La Grange, Texas on April 22, 1900, Mr. Math came to New York as a small boy and at 15 joined Sinclair & Valentine. Starting as an office boy he rose through the ranks and became president of the company in 1945 and chairman of the board in 1952. Mr. Math served for three successive terms, 1940,

1941 and 1942, as president of the National Association of Printing Ink Makers of which he had been director continuously since 1934. He was the first president and a director of the National Printing Ink Research Institute. Highly conscious of his civic responsibilities, he devoted much time to charitable and religious organizations. Surviving are his wife, a daughter and three sons, one of whom, Daniel F., is associated with Sinclair & Valentine. Burial took place following a Solemn High Requiem Mass at St. Patrick's Cathedral in New York on May 16.

Richard A. Crawford

Richard A. Crawford, director of rubber research for the B. F. Goodrich Co., died unexpectedly at his home in Akron recently. He was 52 years old. Well known nationally in rubber and chemical circles, he had worked at Goodrich for 29 years. He won national recognition as a specialist on reclaimed rubber, rubber cements and adhesives and the compounding of latex. Born in Logan, Ohio, he attended schools in Dayton and Seattle, Wash., and received his bachelor's and doctor's degrees from Ohio State University. Mr. Crawford was a member of the American Chemical Society and the American Institute of Chemical Engineering as well as Phi Beta Kappa; Sigma Xi, national honorary scientific fraternity; and Phi Lamba Epsilon, national honorary chemical fraternity.

James W. McLaughlin

James W. McLaughlin, vice-president of the Union Carbide & Carbon Corp., New York, N. Y., died suddenly on May 15 at his home in New Rochelle, N. Y. He was 62 years old. Mr. McLaughin was chairman of the Bakelite Co. and Bakelite Co. (Canada), Ltd., vice-president of Carbide & Carbon Chemicals Co. and vice-president and director of Carbide & Carbon Chemicals Co., Ltd., all associated with Union Carbide. Mr. McLaughlin was graduated from the University of Illinois in 1914. After graduation he was employed by the Peoples Gas, Light & Coke Co. of Chicago, Ill., as an engineer and continued in that capacity until December, 1918. He then joined the Prest-o-lite Co. as assistant superintendent. He was associated for many years with various Prest-o-lite and Linde Air Products Co. plants in the midwest and on the Pacific Coast, all of which were early operations of Union Carbide.

In 1927, he was shifted to the South Charleston, West, Va., plant of Carbide & Carbon where he became assistant superintendent. In 1929, Mr. McLaughlin became general superintendent of the plant and in 1931, he was made a vice-president of Carbide & Carbon in New York. In this capacity, he became associated with Union Carbide's plastics activities and in 1944 was made president of the Bakelite Co. A year later, he was elected vice-president of Union Carbide and, in 1952, he became chairman of the board of the Bakelite Co.

Fred J. Schrank

Fred J. Schrank, formerly engaged in the rubber industry and the printing business and father of Harry P. Schrank, vice-president in charge of production at the Seiberling Rubber Co., died on May 28 at his home in Akron, Ohio. He was 77 years old. For approximately 25 years Mr. Schrank had been associated with the Warner Printing Co. and later at the Curtis Printing Co. He then joined the Swinehart Rubber Co. in Akron as manager of the Solid Tire Department. He retired in 1929. An inventor of note, he patented a rubber stop sign that for many years was a familiar sight on America's streets and highways. He was born in Akron on September 18, 1875. Services were held on June 1 in Akron with interment in Mt. Peace Cemetery. He leaves his wife, two sons and a daughter.

William F. Burke

William F. Burke, controller and assistant treasurer of the Scovill Manufacturing Co., died on May 1 at Waterbury Hospital, Waterbury, Mass., after suffering a heart attack at his home. He was 58 years old. He was graduated from Yale University in 1917, with summa cum laude honor.

Samuel J. Young

Samuel J. Young, finance director of the Goodyear Tyre & Rubber Co. of Australia, Ltd., died suddenly in Australia after suffering a heart attack on May 17. He was 56 years old. Born in Philadelphia, Penna., Mr. Young served in the Marine Corps during World War I and received a law degree from the Kansas City School of Law in 1926. Associated with Goodyear for more than 33 years, he joined the company in 1919. He joined the Goodyear Tire & Rubber Export Co. in 1928, and shortly thereafter was named secretary for Goodyear-South Africa, where he remained for 16 years. On returning to the United States, he became manager of the Comptroller's Foreign Department in Akron. Three years later he was appointed finance director for Goodyear-Australia, continuing in that position until his death. He leaves his wife, a son and a daughter.

Dr. LaVerne E. Cheyney

Dr. LaVerne E. Cheyney, research chemist for the Minnesota Mining & Manufacturing Co. at Detroit, Mich., died recently while en route home after a business trip. He was 42 years old. Dr. Cheyney was born in Akron and was graduated from Akron University. He received a master's degree from the University of Pennsylvania and a doctorate from Ohio State University. Dr. Cheyney was associated with the Goodyear Tire & Rubber Co. from 1939 to 1945 and then held positions with the Battelle Memorial Institute at Columbus, Ohio, and the Oxford Paper Co. of Middletown, Ohio. He joined Minnesota Mining in 1950. Services were held in Grosse Point, Mich., with interment in Portsmouth, Ohio. He leaves his parents, his wife, two sons and a daughter.

George H. Gleason

George H. Gleason, who retired in 1952 from the presidency of the Barrett Division of the Allied Chemical & Dye Corp. because of his health, died on May 24 in Memorial Hospital in New York City after a long illness. Mr. Gleason was born in Scranton, Penna. In both world wars, the government used his technical knowledge and experience in the production of chemicals and metals essential in war products. During World War II, Mr. Gleason took over in Washington as consultant on war essential metals, and acted as liaison officer for the O.P.A. and the Army, Navy and Maritime Commissions. He is survived by his wife, a son and a daughter.

John A. Lutz

John A. Lutz, eastern sales manager of the Titanium Pigment Corp., New York, N. Y., died of a heart attack on May 30 at Mountainside Hospital in Montclair, N. J. He was 46 years old. Born in Meyerstown, Penna., Mr. Lutz attended Lehigh University. He was a Mason. His wife and son survive.

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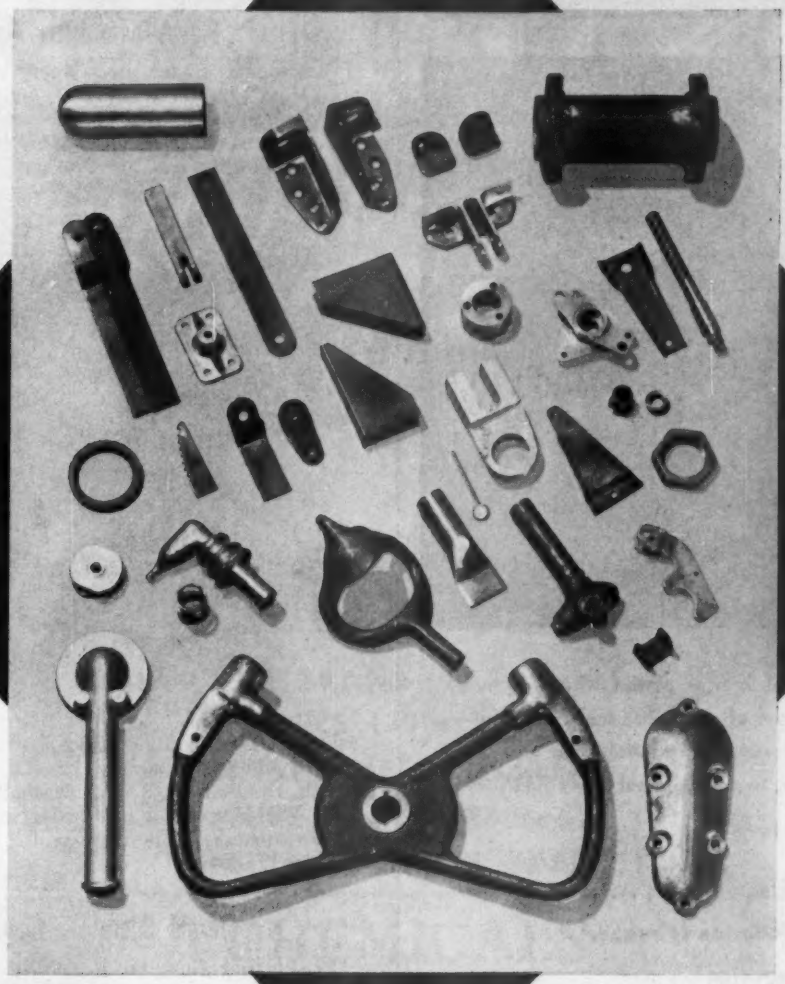

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JOHNSON special bronze plated wire, for many years the preference of major tire manufacturers — now available for vacuum and defroster hose producers, in addition to conventional liquor finish wire.

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Johnson line of specialty wires also includes oil-tempered and cold-drawn brush wire — tire bead wire — steel wire for field telephones — music spring wire.

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NEW GOODS

Flex-A-Foam Filter Mask

Featuring a foam latex filter, the "Flex-A-Foam Filter Mask" produced by the Goggle Parts Co., Cleveland, Ohio, is said to provide increased protection against non-toxic dusts as small as 1/25,000 of an inch. The frame of the mask is made of polyethylene, to which is attached a non-skid, natural rubber headband. The

mask is self adjusting to any size and weighs only 1 ounce complete. Easy to breathe through and talk through, the new mask is all washable and easily sterilized. The company is also producing a line of "Long-Life Sweatbands." These are made of foam sponge with an elastic headband.

Flexoid Silentbloc Couplings

The Flexoid Coupling Co., Division of the Smith Power Transmission Co., Cleveland, Ohio, has introduced a line of "Flexoid Silentbloc Couplings," in which the rubber element is used in what is said to be an entirely different way. Instead of having one plate fitted with rubber bushings, and another with fixed pins, these couplings use two flanges fitted with encased rubber bushings, with free floating-pins connecting the two and floating freely in the ID of the inner sleeve of the rubber bushings elements. The pins are held in position by means of snap rings on the pins, between the two flange members. With this construction, the force applied to the rubber is a twisting or conical force. Each pin acts as a beam supported by a rubber bushing which can allow considerable deflection at the end of the pin. The degree of stiffness of the bushing, and the unsupported length of the pin will determine the magnitude of deflection at the end of the pin. The high compression of the rubber allows the inner sleeve, and pin, to twist over angles of 15 degrees without allowing any portion of the rubber element to completely lose its pressure against the metal. This eliminates the scuffing action at the end of the bushing, and is the factor which makes the operation of the coupling possible, the company states.

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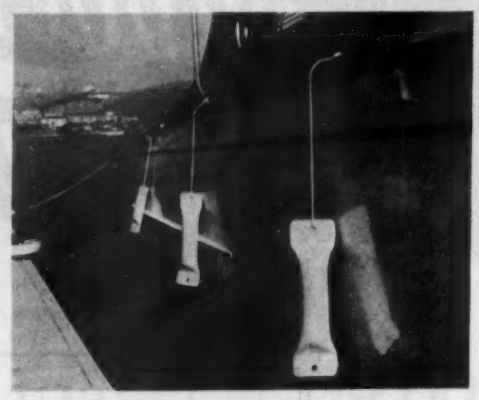
Everguard Boat Fenders

Everguard Co., 224 Lido Nord, Newport Beach, Calif., has introduced a new line of smartly styled boat fenders. With a covering of neoprene on a core of sponge rubber, the fenders are resistant to sunlight, marine atmosphere, gasoline and oil. The combination of a thick, flexible rubber casing and a spongy, shock-absorbent core produces a lightweight fender that can take any sort of punishment from friction, pounding and weather. Gleaming white and easy to keep clean, Everguard fenders will



float, and they do not require long drying periods on deck. All-neoprene fenders won't mildew, so they can be wiped off and stowed immediately. Everguard also produces a line of boat bumpers, dock guards and a dock wheel all made of neoprene. This latter item, designed to provide a pivoting cushion around which a boat can be safely worked into its berth, consists of a semi-pneumatic white neoprene tire mounted on a 10-inch galvanized steel wheel and bracket.

Water Wonder Beach Board

A buoyant, smooth-surface plastic beach board, that will support up to 150 pounds in water and can be used for water sports or swimming instruction, has been developed by the Sponge Rubber Products Co., Derby, Conn. The new board, called the "Water Wonder," has a tough smooth outer skin and a sponge-like interior filled with millions of tiny cells containing nitrogen gas. The cellular inner structure gives the board its buoyancy. It is molded in one piece from Marvinol vinyl plastic. The board will neither absorb water or break in normal use. It is 22 inches long and weighs only 12 ounces. It is not affected by strong sunlight or weathering and will hold its shape for many years, the company states.

Goodrich "Highflex" Fire Hose

A new lightweight fire hose made with Dacron has been introduced by the B. F. Goodrich Co. Called "Highflex," one hundred feet of the new hose weighs about twenty pounds less than the same length of standard hose. The company states that with Dacron woven into the fabric hose cover, the hose is so light and flexible that a standard firetruck can carry about five hundred feet more hose than its normal load. Goodrich says that the synthetic fiber used in the hose is three times stronger than the same weight of cord previously used.

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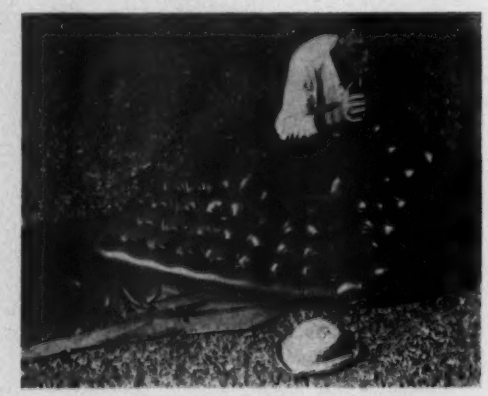
Bilnor Inflatable Swim Ring

Bilnor Corp., Brooklyn, New York, has introduced "Donut Duck", a new inflatable swim ring made of Vinylite plastic. The head of the unit may be twisted and swung into an upright position without causing the flexible Vinylite to crack or tear. The upright head of

Donut Duck gives children something to hold on to in the water. This swim ring can be inflated by mouth. The flexible valve is also made of Vinylite plastic and it folds and tucks away safely where it cannot harm the child. The unit resists salt water and wear by gritty sand.

Inflatable Vinylite Mattress

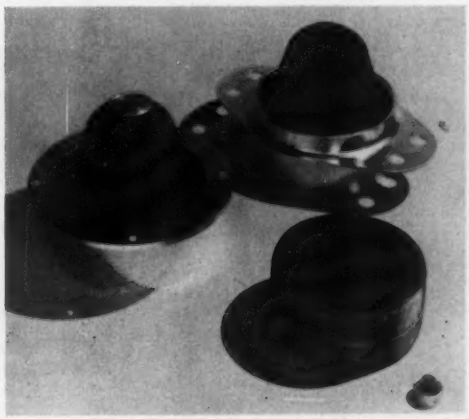
Greater outdoor sleeping comfort is combined with economy and convenience in a new type of inflatable mattress of Vinylite plastic in a tufted design. Produced by the U. S. Fiber and Plastics Corp., Stirling, N. J., the new mattress folds, when deflated, into a small convenient package. It is easily inflated through a rust-



resistant metal valve, as shown in the accompany photograph. Measuring 24 by 74 inches, the mattress fits into most sleeping bags. The Vinylite plastic in the mattress remains flexible at low temperatures and the tufted structure helps the inflated mattress retain its shape under varying body pressures, making it more comfortable for sleeping, the manufacturer states.

Cohrlastic Non-Linear Mounts

A new group of unique shock and vibration mountings said to have many advantages over conventional linear mountings has been announced by the Connecticut Hard Rubber Co. of New Haven, Conn. Called "Cohrlastic DS Non-Linear Mounts," they are designed to provide the greatest possible energy absorption for a given deflection and a given peak load. Made with silicone rubber, the mounts are also available in natural rubber and neoprene. The company states that the initial rate of energy absorption is higher for the non-linear mounts than for linear types because their initial



stiffness is higher. The initial softness of conventional mountings causes them to "loaf" for the first portion of their deflection under load and therefore they must build up higher restoring forces at their maximum deflection than is required for the non-linear types. Non-linear mountings are ideal for dual purposes—both shock and vibration isolation. Temperature limits of satisfactory operation of these mountings is from 50 to 165° F. The design of this group of mounts is such that the same basic principle is employed for a wide variety of rated loadings.

"3-D" Insulating Material

Fiber Bond Corp. of Chicago, Ill., is producing a new outerwear insulation material called "3-D" Dynel, which utilizes a rubber binding latex specially compounded for this application by the American Anode Division of the B. F. Goodrich Co. The new material is said to be 43% warmer and 31% lighter than wool. It is made of fluffy non-woven Dynel fibers bonded together with the latex. The latex gives the material a good hand and keeps it springy and flexible even at below zero temperatures. Potential uses for "3-D" Dynel insulation include non-allergic pillows, blankets, packaging dunnage, as well as men's, women's and children's apparel.

Goodyear has announced the development of a new balloon tire which gives cyclists easier peddling, longer coasting and maximum safety. Known as the "Super Eagle", the tire is said to combine superior quality achieved through new compounding processes, with still further improvements in design, featured by a new tread. The tire is made with a recently-developed fabric treatment, tread and sidewall compounds which assure extreme rolling ease and flexibility, the company states.

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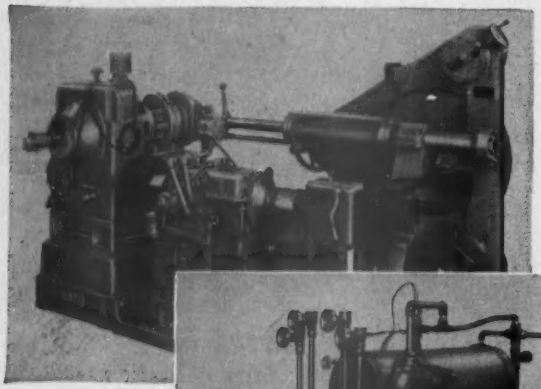
Of Particular Importance

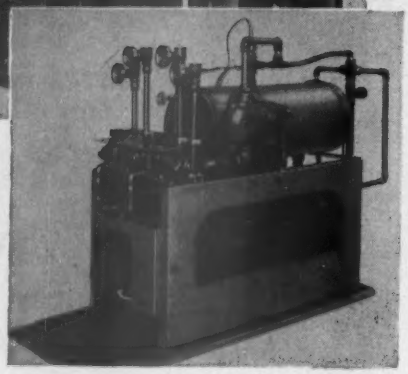
To the Wire Insulating Industry

The room temperature compound process and associated equipment recently developed by the Western Electric Company, Incorporated, offer nine important advantages. These advantages begin with the storage of completely mixed, ready-to-extrude, rubber, GR-S, or Neoprene compounds and extend to a smoother and improved appearance for the finished product.

The complete extruder vulcanizing portion of the room temperature compound process is available to insulated wire producers* from John Royle and Sons who, for seventy-two years, have been building extruding machines to meet the most exacting process requirements.



↑ Royle #2 (3¼") Continuous Vulcanizing Extruder for room temperature compound process.



→ Royle extruder temperature control unit utilizing steam and hot water.

CHECK THESE ADVANTAGES:

- Improved diameter control
- Reduction in compound scrap
- Reduction in electrical faults
- Permits storage of completely mixed compounds
- Permits more economical scheduling of mixing equipment
- Eliminates "warm-up" operation
- Possible mill-room economies
- "Hot" machines may be converted
- Finished product has smoother finish—better appearance

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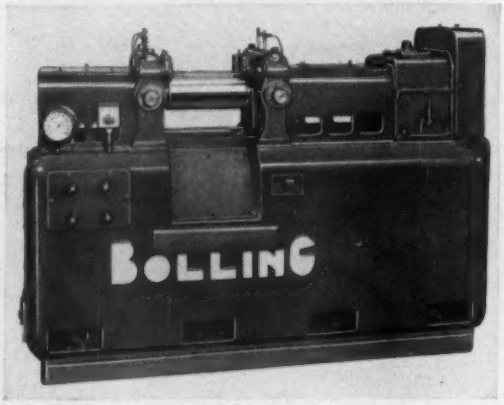
NEW EQUIPMENT

Bolling Deluxe Laboratory Mill

A new deluxe laboratory 2-roll mill for rubber or plastics, having 6-inch diameter by 13-inch face chrome-plated rolls, has been introduced by Stewart Bolling & Co., Inc., 3190 East 65th St., Cleveland 27, Ohio. The roll bearings on the new laboratory mill are Timken anti-friction with a full flood lubrication system. The rolls themselves are driven by large universal joints,



permitting an unusually wide roll opening and eliminating external connecting gears. The fully-enclosed, splash-lubricated gearing in the drive stand is cut helical, reducing noise and vibration to practically zero. Piping for steam or water is built in, with controls at the operator's hand. All parts, other than the working faces of the rolls, are fully enclosed. The drive is by a 7½ h.p. gearmotor having an enclosed disc-type brake, including control. Other features of the new deluxe laboratory mill include stainless steel guides, push-pull type thrust screws, and knee-operated safety switches.

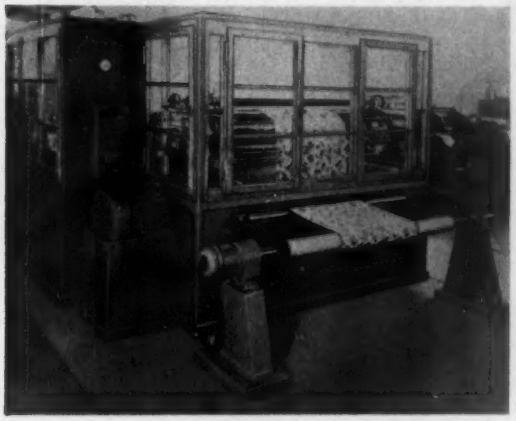
An **overload release clutch** which can be installed on sprocket, chain, belt and gear drives, has been announced by the Overload Release Clutch Co., Inc., 1162 Stuyvesant Ave., Irvington, N. J. This safety device has instantaneous trigger action and is designed to allow machines to resume operation at the exact cycle point of release.

A new line of magnetic **starters, contactors and relays** has been announced by Cutler-Hammer, Inc., 315 N. 12th St., Milwaukee 1, Wisc. The new line incorporates a simple 5 unit construction consisting of 2 contact blocks, a magnet coil, an armature and a 3-coil or 2-coil overload relay mounted on a steel panel. Each part can be removed from the front without disturbing another part.

A new **Electro-Hydraulic Tensile Tester** produced by the Thwing-Albert Instrument Co., Penn St. at Pulaski Ave., Philadelphia 44, Penna., is suitable for routine production and quality control work in the plant and accurate and flexible enough for the research laboratory.

Hobbs Alquist Winder

Tension that is genuinely constant from start to finish of the winding operation is maintained by the newly-introduced "Alquist" Winder, according to the distributor, Hobbs Manufacturing Co. of Worcester, Mass. Control of the device is entirely electrical. It is said to permit users to get a quality of rewound material never before possible. The unit is comprised of a specially designed electric motor and housing, with a control box or panel to be hung on the wall or at some other convenient place for remote control. Either right or left hand winding can be secured.



Specifically, it winds up on a roll or on a spool a wide variety of materials, maintaining uniformity of tension throughout the diameter of the roll and providing a positive and easy adjustment of any winding tension. The tension can be set at a number of pounds' pull at the start of a roll, and is maintained automatically at that tension from the core to the circumference of the roll. Manufactured in Europe since 1946, the Hobbs "Alquist" Winder is now making its debut in the United States.

SEE PAGE 292

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G-E Magnetic Tension Brakes

Two new magnetic tension brakes of the hysteresis type have been announced by the Control Department of the General Electric Co., Schenectady 5, N. Y. With torque ranges of 0.4 to 4.0 and 2.0 to 14.0 ounce-inches, the new units supplement the company's original brake which has a torque range of 0.1 to 0.5 ounce-inches. Designed to provide constant tension and thus reduce abrasion and excess flexing of synthetic and natural yarns, as well as rubber, glass fiber, and wire, the large sizes of the new brakes make them particularly adapted for use

on a loading device where constant torque is required. Approximately two and three inches in diameter and weighing about ¾ and 2½ pounds respectively, the brakes have a speed range of 0 to 1500 rpm.

Although no pulley is supplied as with the smaller brake, torque adjustment is the same. Turning the calibrated aluminum magnet housing decreases or increases the torque of the brake by altering the distance between four Alnico magnets and a hysteresis ring. The brake holds stalled tension by a tendency to reverse direction of rotation for a few degrees after decelerating to a standstill. Because the braking action is provided by a magnetic field, there are no rubbing parts to wear and the unit will retain the required torque unaffected by lint, moisture and heat, according to G-E engineers. All brakes are calibrated before shipment and will hold constant torque almost indefinitely unless disassembled or subjected to a strong external magnetic field.

A recent addition to the complete line of adjustable length conveyors manufactured by the Stewart-Glapat Corp., Zanesville, Ohio, is the double-boomed **Adjustoveyor.** This unit is designed for heavy-duty applications requiring heavy load carying capacities, and has the unique feature of increasing its open length 220% over its closed length.

Long life and maximum performance, with minimum servicing requirements, are built into a newly designed **rotary pressure joint** introduced by Anco, Inc., 1 Baker St., Providence, R. I.

A new miniature **variable speed changer** with lever speed control has been announcd by the Metron Instrument Co., 432 Lincoln St., Denver 9, Colo. The lever speed control, with a limited arc of 63°, provides for rapid changes of speed over a 25 to 1 range.

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RED PIGMENT and FILLER for RUBBER MANUFACTURERS

Pure RED IRON OXIDE

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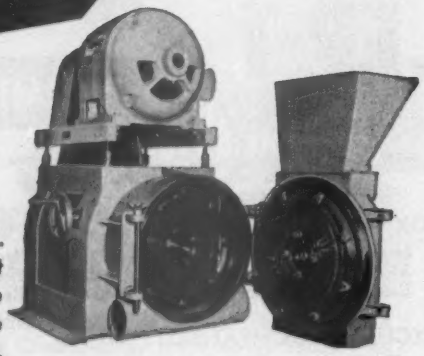
for pulverizing to the finest mesh
Foremost
50 H.P. Grinder



The 50 H.P. Foremost Grinder is the standard of the rubber industry. Installed in many of the nation's largest plants, it has proven itself time and again. It's rugged, easily accessible, easy to operate and requires little maintenance.

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REVIEWS

BOOKS

Handbook of Material Trade Names: 1953. By O. T. Zimmerman and Irvin Lavine. Published by Industrial Research Service, Masonic Bldg., Dover, N. H. 7½ x 10½ in. 794 pp. $20.00, domestic; $22.50, foreign.

The latest edition of this handbook of trade names, actually the second to be published, is one of the finest what-how-who directories yet issued. It uses a large page size, double column pages, large legible type, and has a durable binding. The 1953 edition is divided into three sections: (1) Alphabetical Listings, (2) Use Classification, and (3) Company Directory. The alphabetical listings include over 15,000 important trade name materials, ranging from abrasives to zeolites. For each material data is furnished on physical and chemical properties, important industrial uses, and the name of the manufacturer or distributor. Symbols are used to indicate whether the material is a registered trade-mark, an unregistered trade-mark, or a generic or common name. The classification section is a new addition, and classifies all the materials described in the book according to their major uses or composition, thus making it possible for the user to readily obtain information about specific types of materials. The directory section has been expanded so that it not only provides the address of each company whose products are covered in the book but also lists the products described. The handbook should be of value to everyone who buys, sells or develops new materials.

•

An Introduction to the Chemistry of the Hydrides. By Dallas T. Hurd. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 6 x 9 in. 230 pp. $5.50.

In view of the fact that the field of hydride chemistry is currently undergoing a rapid expansion, both in the scope of academic research and in the extent of industrial application, this book on the chemistry and applications of the hydrides should prove a welcome addition to the technical literature. The author has not attempted to make the book one of the reference type, but rather has presented a critical and coordinated explanation of the theory, the properties, and the reactions of the hydrides which should prove of direct interest to the chemist. The full field of the hydrides is covered and brief reference is made to the use of decaborane for the vulcanization of rubber, particularly the silicone rubbers. The book has 17 chapters in all, the last of which is devoted to nomenclature of the hydrides, several appendices, and an author and subject index.

•

Pioneering in Aeronautics. Published by the Daniel Guggenheim Medal Board, 29 West 39th St., New York 18, N. Y. 6 x 9¼ in. 148 pp. $1.25, paper; $2.25, cloth.

The Daniel Guggenheim Medal was created as an international award for the purpose of honoring persons who make notable achievements in the advancement of aeronautics. Presentation of the medal is administered by a special board of award composed of members from the A.S.M.E., S.A.E., and the Institute of the Aeronautical Sciences. This book presents biographies of all of the recipients of the medal from 1929 through 1952. Included among these were Orville Wright, William E. Boeing, Hugo Eckener, Glenn L. Martin, Igor I. Sikorsky, and Lester D. Gardner. Mr. Gardner, the medalist for 1947, was the founder of the Gardner Publishing Co., the original publishers of RUBBER AGE.

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BOOKLETS, CATALOGS, etc.

Behind the Scenes of Business. By Roy A. Foulke. Published by Dun & Bradstreet, Inc., 99 Church St., New York 8, N. Y. 5½ x 8½ in. 194 pp.

This study was first published in 1935 with the hope that it would give business men some background of basic facts, interpretations, and reasoning not readily available up to that time. In 1936, 1937, and now again in 1952 the study has been completely revised. Some incidents used in the earlier publications have been eliminated, and others added, to illustrate more clearly recent problems, and the results of minor and major policy decisions in the everyday operations of manufacturers, wholesalers and retailers. In the nine chapters which comprise the book, the first deals with management responsibilities, and the vision that inspires sound policies. The next four chapters consider the financial analyses and applications of the financial analyses of the capital, inventory, sales and net profits of a business concern. Chaper 6 deals with the elements of successful management, especially under competitive and adverse conditions. The last three chapters are devoted to "Relativity of the Moral Hazard," "Old Age of the Business Enterprise," and "Prepare for Tomorrow."

•

Industrial Controls: Electric-Electronic-Pneumatic. (Catalog 8305). Industrial Division, Minneapolis-Honeywell Regulator Co., Wayne and Windrim Aves., Philadelphia 44, Penna. 8½ x 11 in. 84 pp.

Non-indicating electric, electronic and pneumatic controllers for temperature, pressure and humidity are described in this catalog. Also covered are pneumatic and electric valves, switches and relays. Specifications, dimension drawings, application data and ordering information are included. Many of the units described are illustrated.

•

Ideas Into Dollars. Commonwealth Engineering Co. of Ohio, 1771 Springfield St., Dayton, Ohio. 8½ x 11 in. 12 pp.

This interesting booklet describes the services of the company in the completion of an industrial research project from the idea to the pilot plant or model to final production in a complete plant. The complete services offered by the company for the translation of the idea into a money making enterprise are described in a step by step analysis of the company's functions.

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SEE PAGE 292

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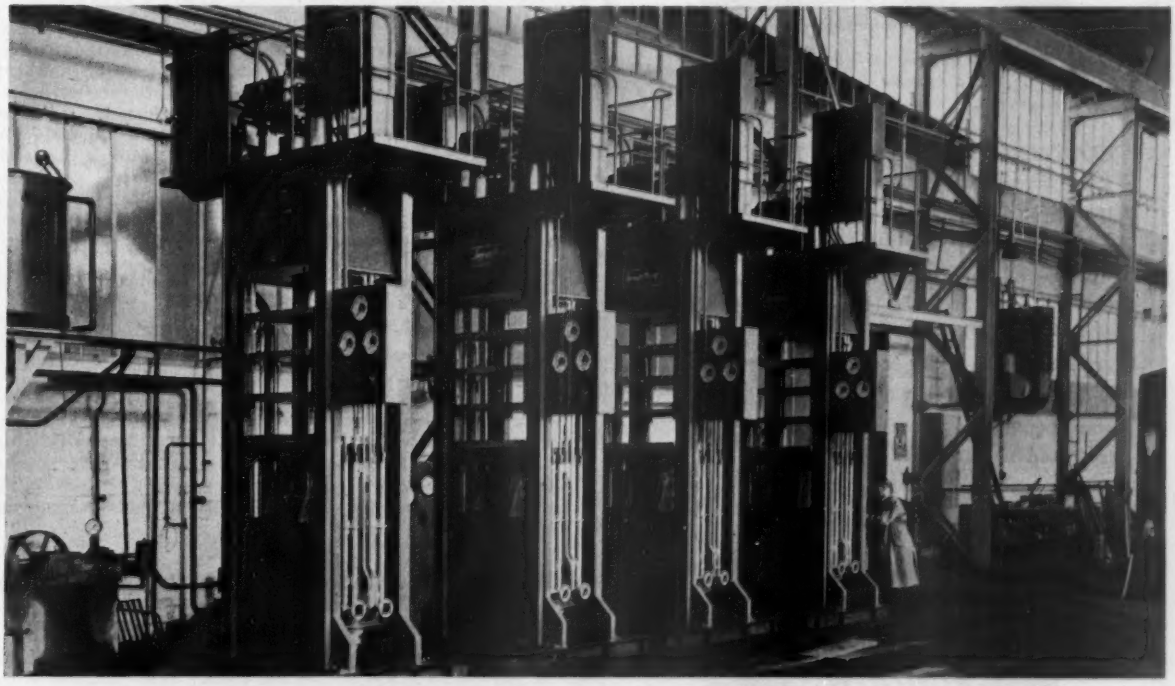

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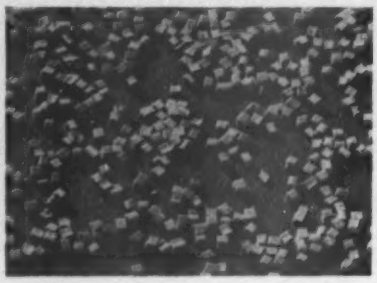

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Rotary shears that cut rubber sheets into strips. Knife cylinder for cross cutting in background.

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Herringbone Gear Drives. (Book 2519). Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill. 8½ x 11 in. 36 pp.

This publication offers detailed information about Link-Belt single, double and triple reduction enclosed herringbone gear drives. Installation photographs show examples of these drives in many types of heavy-duty service. The horsepower rating tables contained in this book give many new ratios. Ratings for input speeds of 720 to 1750 rpm are given for all drive sizes. Complete instructions for correct selection are provided, including new overhung load tables and a table listing load classes for 170 types of machines. The book also lists 39 sizes of drives in 534 standard ratios, from 2.84:1 to 326:1. Capacities range from 0.4 to 2480 horsepower, and shaft speeds range from 2.2 to 623 rpm. Standardized packaged drives, with motor, baseplate, geared coupling and single, double or triple herringbone gear drive, are listed with dimensions and NEMA motor frame numbers.

•

Industrial Temperature Measurement and Control. (Bulletin No. 101). Partlow Corp., New Hartford, N. Y. 8½ x 11 in. 24 pp.

This newly-revised two-color manual presents the basic principles of industrial temperature control in practical fashion. It defines different types of control systems and distinguishes between them so that the engineer can select the type most suited to a particular application. The manual discusses the eight ways of responding to temperature, the five ways of putting that response to work, and the nine basic Partlow instrument types. It then takes up evaluation of systems and the important considerations in application engineering. Typical control circuits and piping system arrangements, as well as the ranges and calibrations of scales and dials, are presented diagrammatically. The bulletin is liberally illustrated.

•

Taylor Dial Thermometers. (Bulletin 98214). Taylor Instrument Companies, Rochester 1, N. Y. 8½ x 11 in. 24 pp.

This bulletin describes the latest development in 6-inch dial indicators for temperature, pressure and load applications. It is profusely illustrated and supplies considerable information on features, dials and scales available, together with excellent reference material on the different types of actuation. For temperature instruments, a variety of sensitive elements or bulbs are clearly explained and the recommended applications for each present an easy means for their selection. Mounting dimensions for the different types of instruments are also included to give a clear picture to the prospective user.

•

Review of International Commodity Problems: 1952. United Nations, New York, N. Y., 8½ x 11 in. 51 pp. $.50.

This review was prepared by the Interim Co-ordinating Committee for International Commodity Arrangements, established in 1947 in accordance with the provisions of Resolution 30 (IV) of the Economic and Social Council. Of particular interest is the section devoted to rubber. Here, the general picture as it presented itself in 1952 is described. One of the chapters of the report deals with inter-governmental consulation and action on commodity problems, and an appendix to the report surveys the current situation in the principal primary commodities entering into international trade.

•

Waterbury Heavy Duty Oil Hydraulic Pumps and Motors. Waterbury Tool Division, Vickers, Inc., Waterbury 20, Conn. 8½ x 11 in. Approximately 40 pp.

This handsome publication presents a compilation of data on the heavy duty pumps, motors and transmissions produced by the company. Waterbury pumps described are of the positive displacement, axial piston type, while Waterbury motors are suitable for either open or closed hydraulic circuits. Company transmissions are a combination of a Waterbury pump driving a Waterbury motor. Complete engineering specifications and other information of interest is presented.

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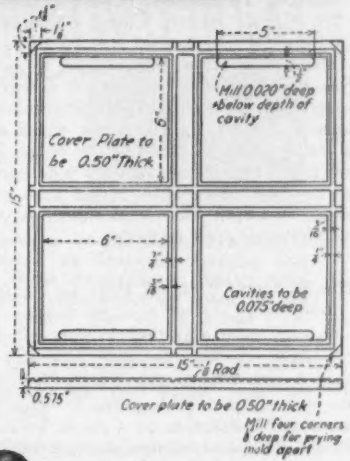
Cover Plate to be 0.50" Thick
Mill 0.020" deep below depth of cavity
Cavities to be 0.075 deep
Cover plate to be 0.50" thick
Mill four corners ⅛ deep for prying mold apart

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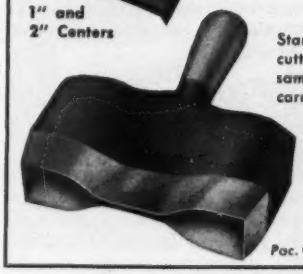

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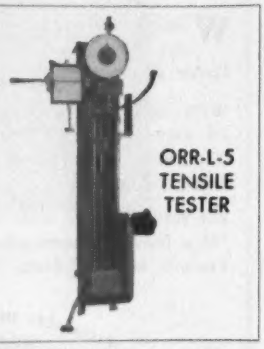
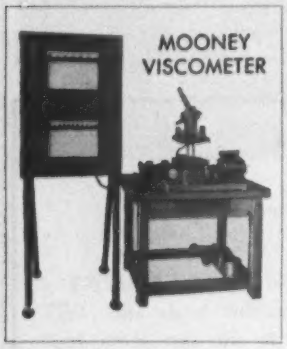


As developed through cooperation of Sub-committee on Test Methods of the Office of Rubber Reserve** and National Bureau of Standards** Fulfills requirements of ASTM Test D412-49T.



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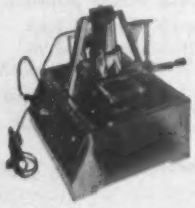

BRITTLE POINT

As developed by American Cyanamid Company's laboratory. For ASTM D746 Test on vulcanized rubber and other elastomers.

REQUEST CATALOG 53

***Mention of these organizations does not constitute endorsement by them.*

SCOTT TESTERS, INC. 85 Blackstone St. Providence, R. I.

Standard of the World

Identification of Synthetic Fibers by Microscopical and Dye Staining Techniques. (Calco Technical Bulletin No. 831). By G. L. Royer. Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J. 8½ x 11 in. 12 pp.

The author states that because of the complications in the dyeing of the newer synthetics, it is necessary to know the fiber composition of the materials being colored. This is difficult because of the many combinations which are possible and because of the newness of many of the fibers. Identification stain tests and microscopical identification tests have been found very useful in these cases. This article goes on to describe the techniques developed for the identification of synthetic fibers using the aforementioned methods.

•

The Builders. E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. 9 x 12 in. 32 pp.

This illustrated booklet provides a tribute to the Engineering Department of the company which this year celebrates its 50th Anniversary. The booklet documents that plant construction today is a complicated business. It describes how the recent purchase and installation of a single boiler involved a prime contractor, 300 subcontractors and 2,500 additional orders. The booklet also shows that today's spectacular new industrial technology is the key to plenty.

•

The Columbia-Southern Story. Columbia-Southern Chemical Corp., Fifth Ave. at Bellefield, Pittsburgh 13, Penna. 11 x 14 in. 14 pp.

This handsome booklet describes the company, the plants which it operates and the products which it produces for home and industry. It also describes the manner in which its products are made, and the services offered by its technical departments. Research and development activities of the company are also described. Photographs and drawings depict many of the concern's facilities and illustrate various manufacturing operations.

•

The Heat and Mass Flow Analyzer. Engineering Center, Columbia University, New York 27, N. Y. 5¾ x 8 in. 16 pp.

News about Columbia University's Heat and Mass Flow Analyzer Laboratory is contained in this booklet. The laboratory, founded twelve years ago as a non-profit service to industry, is a computing organization for the study of heat flow and diffusion problems. The background and function of the laboratory are described in detail in the booklet.

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SEE PAGE 292

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MARKETS NEWS-PRICES

NEW YORK, JUNE 15, 1953

Raw Rubber

Natural: Since our last report (May 8), the price of spot rubber on the New York Commodity Exchange has moved in a range of 1c, high for the period being 25.50c reached on May 20, and low being 24.50c reached on June 5. The average price of spot rubber for the month of May was 25.52c based on 21 trading days. This compares with an average of 24.66c in the previous month.

Restricted price fluctuations and a lack of a definite trend continued during the past period. There is little to indicate that the market will be lifted out of its present narrow range in the near future. The markets abroad are also quiet and fairly steady. A little increase in continental absorption has been noted. Purchases for Iron Curtain countries, however, are still extremely limited.

While a great many rubber plants in the United States have been accustomed to closing down for an average of two weeks, usually the first two weeks in July, it is reported from a number of sources that some manufacturers may be closed for a period of three weeks. Consumers have long anticipated their nearby requirements, and on this basis there is no reason to assume that there will be any important demand for nearby rubber for some weeks to come.

Synthetic: It has been estimated by the U. S. Department of Commerce, that in the first four months of this year, 296,900 long tons of synthetic rubber were consumed in the United States. This compares with the 275,133 long tons consumed in the first four months of the preceding year.

World production of synthetic rubber in April was estimated at 90,000 tons by the National Production Authority. For the first four months of 1952, world production of synthetic totaled 329,500 tons. World consumption in April was estimated at 85,000 tons, and for the first four months of this year, amounted to 327,500 long tons. World figures exclude Russian production and consumption.

The overwhelming significance of the American synthetic rubber industry can be ascertained by comparing these figures on world consumption in April with April consumption in the United States. According to recently-released figures by the Rubber Manufacturers Association, consumption in April totaled 77,413 long tons; this out of a total world consumption of 85,000 tons. GR-S accounted for 61,969 long tons in the U. S. April consumption figure.

The trade believes there is a good chance that the House will pass the bill (with some changes) providing for the disposal of the synthetic rubber plants as authored by Representative Paul W. Shafer (Rep., Mich.). Mr. Shafer recently indicated that he had received "overtures" from the Senate Banking Committee, indicating that they may accept the House bill. A complete report on both the Senate and House bills appears elsewhere in this issue.

Price Data

Closing Rubber Prices on New York Commodity Exchange (No. 1 R.S.S. Contract)

FROM MAY 9 TO JUNE 15

May	Spot	July	Sept	Dec.	Mar.	Sales
9						
10						
11	25.25	25.00	24.70	24.30	24.00	9
12	24.75	24.52	24.25	23.90	23.70	48
13	25.25	25.10	24.80	24.40	24.25	10
14	25.12	24.70	24.50	24.25	23.95	3
15	25.75	25.40	25.20	24.75	24.60	8
16						
17						
18	25.12	24.80	24.60	24.20	24.05	7
19	25.38	25.05	24.95	24.50	24.35	6
20	25.50	25.34	25.00	24.70	24.55	35
21	25.38	24.95	24.75	24.40	24.25	8
22	25.12	24.90	24.60	24.25	24.05	16
23						
24						
25	25.12	24.80	24.70	24.30	24.00	1
26	25.25	24.95	24.80	24.45	24.15	17
27	25.25	24.75	24.65	24.25	24.00	50
28	25.25	24.65	24.45	24.15	23.85	14
29	25.00	24.60	24.40	24.10	23.85	12
30						
31						
June						
1	25.00	24.70	24.50	24.15	23.85	0
2	24.75	24.51	24.35	24.00	23.70	26
3	24.75	24.60	24.40	24.00	23.70	3
4	24.62	24.20	24.15	23.80	23.60	36
5	24.50	24.10	24.00	23.75	23.60	46
6						
7						
8	24.50	24.05	24.00	23.60	23.50	40
9	24.62	24.30	24.20	23.80	23.65	131
10	24.62	24.35	24.30	24.00	23.85	74
11	24.75	24.40	24.25	23.90	23.80	43
12	24.75	24.45	24.35	24.00	23.85	34
13						
14						
15	24.62	24.45	24.25	23.75	23.60	4

Outside Market

No. 1 Ribbed Smoked Sheets:	
Spot	.24⅝
July	.24½
August	.24⅜
Thin Latex Crepe:	
Spot	.27
Thin Brown Crepe, No. 2	.26¼
Smoked Blankets	.21
Flat Bark Crepe	.19½

London Market

(Standard Smoked Sheets)

July-Sept.	23.77 - 23.92
Oct.-Dec.	23.62 - 23.77

Singapore Market

(Standard Smoked Sheets)

July	22.20 - 22.31

Synthetic Rubber

(Dry Types—Per Pound)

Butaprene NF	.490 - .500
Butaprene NL	.500 - .510
Butaprene NAA	.540 - .550
Butaprene NXM	.580 - .590
Chemigum 30N4NS	.500 - .510
Chemigum 50N4NS	.500 - .510
Chemigum N3	.580 - .590
G-E Silicone Rubber (compounded)	3.15 -4.00
G-E Silicone Gum (not compounded)	—— -4.48
GR-I	—— - .2075
GR-S	—— - .230
Hycar OR-15	.580 - .590
Hycar OR-25	.500 - .510
Hycar OS-10	.550 - .560
Neoprene Types AC and CG	—— - .550
Neoprene Type GN	—— - .410
Neoprene Type GN-A	—— - .410
Neoprene Type GRT	—— - .420
Neoprene Type KNR	—— - .750
Neoprene Type O	—— -1.00
Neoprene Type S	—— - .420
Neoprene Type W	—— - .410
Neoprene Type WRT	—— - .450
Paracril B	.500 - .510
Paracril BJ	.500 - .510
Paracril C	.580 - .590
Silastic (compounded)	2.35 -4.40
Thiokol Type A	—— - .470
Thiokol Type FA	—— - .640
Thiokol PR-1	—— - .950
Thiokol Type ST	—— -1.000

Middling Upland Quotations

	May 8	June 15		
	Close	High	Low	Close
July	33.90	33.63	33.42	33.50
Oct.	33.67	33.84	33.63	33.70
Dec.	33.65	33.94	33.73	33.80

Liquid Latex

Natural: The Department of Commerce reports that in the first four months of this year, 24,104 long tons of natural rubber latex were consumed in the United States. This compares with the 16,246 long tons consumed in the first four months of the preceding year. Consumption of natural rubber latex in April, 1953, at 6,048 long tons, was only slightly less than the 6,317 long tons consumed in March.

According to Latex and Rubber, Inc., the imbalance between the available supply of Hevea latex and the requirements of U. S. consumers continues at a "nearby" deficit. While the shortage is not as acute as a few months ago, all consumers have not been able to obtain all the latex they believed they required.

Production has improved and supplies reaching the U. S. are substantially better than the rate of late 1952. "Spot" and "nearby" latex during the past few weeks have ranged from 37 to 39c per pound solids for tank car quantities, f.o.b. port.

Synthetic: U. S. prices of GR-S latices range from 21.5 to 26.0c per pound solids, in tank cars, f.o.b. works; a uniform freight of 1c per pound wet weight charged by the Reconstruction Finance Corporation pays freight to the buyer's destination within the U. S.

Consumption of neoprene latices in the United States is running at about 750 tons per month, while stocks appear to be in excess of 45 days supply. Acrylonitrile latices are being consumed in the U. S. at a rate of 350 to 500 tons per month, and there are stocks for 60 to 90 days supply.

Cotton

The price of middling uplands on the New York Cotton Exchange has moved in the rather narrow range of .75c since our last report (May 8), high for the period being 34.60c reached on May 19 and again on May 20, and low being 33.85c reached on May 26. The average price of middling uplands for the month of May was 34.30c based on 21 trading days. This compares with an average of 33.85c in the previous month.

The Department of Agriculture has estimated that last year's cotton crop amounted to 15,136,000 bales, valued at about $2,617,000,000. This compares with 15,144,000 bales of 500 pounds each in 1951 with a record value of $2,900,000,000. The 1952 crop brought an average of 34.6c a pound compared with 37.95c in 1951. The department based its report on actual ginnings. It is estimated that 26,922,000 acres were planted to cotton last year and that 25,664,000 acres actually were harvested.

Legislation to reduce cotton acreage cutbacks under quotas in the southwest and west has been introduced in the House and Senate by members of Congress from California, Arizona, New Mexico, Nevada, Texas and Florida. The bill, advocated by western cotton producers, would base state quotas on the acreage devoted to cotton during the three years prior to the crop year. For next year, the legislation would require that quotas be determined on plantings during the years 1951, 1952 and 1953. The present law would base 1954 quotas on plantings in the years 1947-1953, excluding 1949. Western cotton producers contend that cutbacks in cotton acreage up to 54% would be required in the western states under the present law because of the heavy increase in cotton production in the last few years.

MARKETS

NEWS-PRICES

NEW YORK, JUNE 15, 1953

Reclaimed Rubber

The trade reports that, in general, the demand for reclaimed rubber has been good during the past month, in spite of some interruptions in automotive manufacturing because of strikes. Most plants are contemplating shutdowns during July and August and consequently they are building up inventories to carry through the shutdown period.

There seems to be an increased demand for compounded reclaims or premixed compounds. These reclaims contain part or all of the compound used in the finished article, and have the advantages of greater pigment dispersion than can be obtained with ordinary mixing procedures.

The Department of Commerce estimates that in the first four months of this year, 103,315 long tons of reclaim were consumed. This compares with the 99,779 long tons consumed in the first four months of the preceding year. Production in the first four months of 1953 was 107,445 long tons, against 98,394 in the first four months of 1952. Stocks on hand on April 30 stood at 39,767 long tons. Current prices follow:

(Prices for All Areas Except Calif.)

	per lb.
Premium Grade Whole Tire	.10½
First Line Whole Tire	.10
Second Line Whole Tire	.09½
Third Line Whole Tire	.09¼
Fourth Line Whole Tire	.08¾
Black Carcass	.14¼
No. 1 Light Colored Carcass	.20¾
No. 1 Select Peel	.11¾
No. 1 Peel	.10½
Butyl Tube Reclaim	.12½
S.P. Natural Rubber Black Tube	.16
Natural Rubber Black Tube	.15
Natural Rubber Red Tube	.24¼
Natural Rubber Gray Tube	.24¼

Tire Fabrics

Activities continued at a fairly moderate level during the period, with cotton chafers picking up somewhat in the latter weeks. It appears as if the major portion of second-quarter production has been sold out, but the trade hesitates to predict possibilities for third-quarter sales. The current trend would seem to indicate, however, that activity in the third quarter of this year may match second-quarter levels.

Within the past few weeks, Goodyear has introduced an all-nylon cord passenger tire which will sell at only slightly more than conventional tires. This is said to be the first tire of its type to be introduced on the popular market.

Western European nations have launched a project to determine the advisability of integrating their rayon industries. European rayon staple and filament yarn capacity is now at some 430,000 and 330,000 metric tons annually, respectively.

(Prices f.o.b. Shipping Point)

Rayon Tire Cord

1100	lb.	.76½
1650	lb.	.73½
2200	lb.	.73

Nylon Tire Cord

210	lb.	2.00
840	lb.	2.00

Rayon Graded Fabric

1100	lb.	.72
1650	lb.	.69½
2200	lb.	.68½

Cotton Chafers

14.4 oz. (per square yard)	lb.	.74
9.25 oz. (per square yard)	lb.	.69½
11.65 oz. (per square yard)	lb.	.66
8.9 oz. (per square yard)	lb.	.71

Scrap Rubber

Limited trading continued to characterize the scrap rubber market during this past period. Scrap tube prices developed further softness with red passenger tubes quoted at around 9.75c in the east. Mixed auto tubes were at 2.00c in the east with black passenger tubes at 3.25c and Butyl tubes around 1.75 to 2.00c. Tube prices, and also quotations for casings, were generally considered nominal in view of the lack of any volume business.

Mixed auto tires were being accepted at Naugatuck, according to recent reports, at $12 for shipments containing a 30% minimum of truck and bus. With the approach of warmer weather, a further slowdown in market activity is anticipated. Current prices follow:

(Prices Delivered Akron)

Mixed tires	ton	14.00
Light colored carcass	lb.	.04½
No. 1 peelings	ton	45.00
No. 2 peelings	ton	30.00
No. 3 peelings	ton	24.00
Buffings	ton	16.00
Truck and Bus S.A.G.	ton	16.00
Passenger S.A.G.	ton	15.00
Natural Rubber Red Tubes	lb.	.10
Natural Rubber Black Tubes	lb.	.03½
Butyl Rubber Tubes	lb.	.02

Rubber

Natural - Synthetic

S. J. PIKE & CO., INC.

30 CHURCH STREET, NEW YORK 7, N. Y.

CABLE ADDRESS "PIKESID, N.Y." TWX-NY 1-3214 TEL: WOrth 4-1776

In Akron:
Tanney-Costello, Inc.
868 E. Tallmadge Ave.
Blackstone 4148

In California:
Merit Western Co.
George Steinbach
717 So. Date Avenue
Alhambra, California
Cumberland 3-1400

CURRENT MARKET PRICES

Of Rubber Chemicals and Compounding Ingredients

JUNE 12, 1953

Prices are, in general, f.o.b. works. Range of prices indicates grade or quantity variations.

Abbreviations: bbls., barrels; c.l., carlot; cyl., cylinder; dlvd., delivered; dms., drums; l.c.l., less than carlot; M.B., masterbatch; min., minimum; ref., refined; sap., saponified; sp., special; syn., synthetic; t.c., tank cars.

***For Export Only**

The arrangement of this section closely follows the Chemical Section of the 1951-52 RUBBER RED BOOK. Readers are referred to the RUBBER RED BOOK for the correct classification of any material or brand name. Suppliers of every material are contacted for price information. However, only those materials are listed for which quotations have been furnished within the past six months. The quotations are not guaranteed and prospective purchasers should contact suppliers for information. Suppliers are requested to send current price information to the Market Editor, RUBBER AGE.

ACCELERATORS

A-1 (Thiocarbanilide)	lb.	.50 -	.57
A-32	lb.	.66 -	.80
A-77	lb.	.47 -	.60
A-100	lb.	.52 -	.66
Accelerator No. 8	lb.	—— -	1.01½
Accelerator—49	lb.	.53 -	.54
Accelerator—552	lb.	—— -	2.25
Accelerator—808	lb.	.66 -	.68
Accelerator—833	lb.	1.17 -	1.19
Altax	lb.	.48 -	.50
Ancap *	lb.	.35 -	.37
Ancatax *	lb.	.43½ -	.45½
Ancazate * BU (ET & ME)	lb.	—— -	1.03½
Ancazide * ET	lb.	—— -	1.03½
ME	lb.	—— -	1.13½
Arazate	lb.	—— -	2.25
Beutene	lb.	.66 -	.68
Bismate, Rodform	lb.	—— -	3.00
Butasan	lb.	—— -	1.04
Butazate	lb.	—— -	1.04
Butyl Accelerator 21	lb.	—— -	.89
Butyl Eight	lb.	1.10 -	1.35
Captax	lb.	.38 -	.40
C-P-B	lb.	—— -	1.95
Cumate, Rodform	lb.	—— -	1.45
Dibenzo G-M-F	lb.	—— -	2.60
Diorthotolylguanidine	lb.	.57 -	.58
Diphenylguanidine	lb.	.48 -	.50
El-Sixty	lb.	.50 -	.57
Ethasan	lb.	—— -	1.04
Ethazate	lb.	—— -	1.04
Ethyl Thiurad	lb.	—— -	1.04
Ethyl Tuex	lb.	—— -	1.04
Ethylac	lb.	.91 -	.93
G-M-F	lb.	—— -	2.60
Good-rite Eric	lb.	.35 -	.37
Guantal	lb.	.57 -	.64
Harvex	lb.	.62 -	.68
Hepteen	lb.	.44 -	.46
Base	lb.	—— -	1.85
Ledate, Rodform	lb.	—— -	1.04
MBT-XXX	lb.	.49 -	.51
Merac	gal.	.75 -	.80
Mercaptobenzothiazole	lb.	.38 -	.40
Mercaptobenzothiazyl Disulfide	lb.	.48 -	.50
Mertax	lb.	.49 -	.56
Methasan	lb.	—— -	1.04
Methazate	lb.	—— -	1.04
Monex	lb.	—— -	1.14
Mono Thiurad	lb.	—— -	1.14
Morfex	lb.	.65 -	.67
2-MT	lb.	—— -	.77½
NA-22 (for neoprene)	lb.	—— -	1.50
NOBS No. 1	lb.	.69 -	.71
O-X-A-F	lb.	.49 -	.51
Pentex	lb.	—— -	1.04
Flour	lb.	—— -	.21
Permalux (for neoprene)	lb.	—— -	2.17
Phenex	lb.	.49 -	.54
Pip-Pip	lb.	—— -	2.25
R-2 Crystals	lb.	—— -	2.45
Rotax	lb.	.49 -	.51
RZ-50	lb.	—— -	1.00
SA 52	lb.	—— -	1.13½
SA 57	lb.	—— -	1.03½
SA 62	lb.	—— -	1.03½
SA 66	lb.	—— -	2.50
SA 67	lb.	—— -	1.03½
SA 77	lb.	—— -	1.03½
Santocure	lb.	.69 -	.76
Selenac (Ethyl, Methyl)	lb.	—— -	2.50
Setsit-5	lb.	.75 -	1.05
SPDX-GH	lb.	.64 -	.69
GL	lb.	—— -	.95
Tellurac	lb.	—— -	1.45
Tepidone	lb.	.45 -	.48
Tetrone A	lb.	—— -	1.91
Thiofide	lb.	.48 -	.55
S	lb.	.51 -	.58
Thionex	lb.	—— -	1.14
Thiotax	lb.	.38 -	.45
Thiurad	lb.	—— -	1.14
Thiuram E	lb.	—— -	1.04
M	lb.	—— -	1.14
Trimene	lb.	.56 -	.58
Base	lb.	1.03 -	1.06
Tuads, Ethyl	lb.	—— -	1.03½
Tuads, Ethyl	lb.	—— -	1.04
Tuads, Methyl	lb.	—— -	1.14
Tuex	lb.	—— -	1.14
Unads	lb.	—— -	1.13½
Ureka Base	lb.	.66 -	.73
Vitasan Crystals	lb.	.48 -	.53
Vulcacure NB	lb.	—— -	.45
ZB	lb.	—— -	.85
ZE	lb.	—— -	.85
ZM	lb.	—— -	.85
Z-B-X	lb.	—— -	2.45
Zenite	lb.	.48 -	.50
A	lb.	.57 -	.59
Zenite Special	lb.	.49 -	.51
Zetax (uncoated)	lb.	.49 -	.51
Zimate, Butyl	lb.	—— -	1.04
Zimate, Ethyl	lb.	—— -	1.04
Zimate, Methyl	lb.	—— -	1.04

ACTIVATORS

Blue Lead Sublimed (dlvd.)	lb.	.14¾ -	.15¾
Fish Oil, Hydrogenated, Fatty Acid			
Hydrofol Acid (dlvd.)	lb.	.10 -	.15¼
Hyfac 430 (dlvd.)	lb.	.14 -	.14¾
Neo-Fat H.F.O. (dlvd.)	lb.	.14½ -	.15¾
Stearex Beads (dlvd.)	lb.	.09 -	.10¼
Lime, Hydrated			
Arrowhead	ton	—— -	20.65
Marblehead	ton	—— -	15.50
Sierra	ton	—— -	19.50
Litharge			
Eagle-Picher (dlvd.)	lb.	—— -	.16
SB (dlvd.)	lb.	—— -	.16
Magnesium Oxide, Heavy			
General Magnesite 500	lb.	.05 -	.06½
600	lb.	.06 -	.08
Michigan No. 15	lb.	.05½ -	.06
Permanente	lb.	.05 -	.06½
Magnesium Oxide, Light			
Baker's (Neoprene Grade)	lb.	—— -	.31
General Magnesite (Neoprene Grade)	lb.	—— -	.30
General Magnesite No. 101	lb.	—— -	.19½
Genmag ML	lb.	—— -	.25
K & M (Neoprene Grade)	lb.	.30 -	.31
Maglite D	lb.	—— -	.25
M	lb.	—— -	.31
Marine's (Neoprene Grade) (l.c.l.)	lb.	—— -	.30
Michigan No. 30	lb.	—— -	.24
No. 40 Extra Light	lb.	—— -	.31
Witco Extra Light	lb.	.32 -	.35
Oleic Acid			
Emersol 210 (dlvd.)	lb.	.10¼ -	.12¾
L.C.P. Red Oil	lb.	.10¼ -	.12¾

ACTIVATORS (Cont'd)

Palm Oil Fatty Acid (c.l.)	lb.	.10½ -	.13
Potassium Oleate (dms.)	lb.	.45 -	.55
Red Lead			
Eagle-Picher	lb.	—— -	.17¼
No. 2 RM (dlvd.)	lb.	—— -	.17¼
Sodium Laurate, 75%	lb.	.64 -	.74
Sodium Oleate, 75%	lb.	.45 -	.55
Paste (dms.)	lb.	—— -	.20
Sodium Stearate, 75%	lb.	.45 -	.55
USP Grade (drums)	lb.	—— -	.37
Stearic Acid, Single Pressed			
Emersol 110 (dlvd.)	lb.	.10½ -	.11¼
Groco 53	lb.	.10½ -	.11¼
Stearex B (dlvd.)	lb.	.15½ -	.16¼
Stearic Acid, Double Pressed			
Groco 54	lb.	.11 -	.11¾
Stearic Acid, Other			
Neo-Fat 1-58	lb.	.1190 -	.1315
1-60	lb.	.1400 -	.1525
1-65	lb.	.1430 -	.1575
White Lead Basic Carbonate	lb.	.16 -	.17
White Lead Basic Sulfate	lb.	.14¾ -	.15¾
Zinc Laurate			
Laurex	lb.	.30 -	.31
Zinc Stearate	lb.	.37 -	.42
Aquazinc	lb.	.20 -	.35

Unclassified Activators

Actifat (dms.)	lb.	—— -	.18
Aktone	lb.	.22 -	.23
Barak	lb.	—— -	.62
Curade	lb.	.57 -	.59
D-B-A	lb.	—— -	1.95
Dibutylamine (dlvd.)	lb.	.53 -	.55¾
MODX	lb.	.295 -	.345
Polyac	lb.	—— -	1.65
Ridacto (drums)	lb.	.25 -	.26
Snodette (dlvd.)	lb.	.16 -	.17¼
Vulklor	lb.	.75 -	.85

ANTI-COAGULANTS

Anhydrous Ammonia (l.c.l.)	lb.	.17 -	.21
Aqua Ammonia (dms.)	lb.	.031 -	.035
M.B.M. (l.c.l.)	lb.	—— -	.35

ANTI-FOAMING AGENTS

Aero Anti Foam H	lb.	—— -	.20
Regular	lb.	—— -	.12
D.C. Antifoam A	lb.	5.65 -	6.65
Antifoam A Emulsion	lb.	2.30 -	4.00
Antifoam AF Emulsion	lb.	2.51 -	2.95
Defoamer A-25	lb.	—— -	3.00
Deltyl Prime	lb.	.70 -	.82
Defoamer 630	lb.	—— -	.12½
Emcol IM	lb.	—— -	.65
Kessco X-3 (dms.)	lb.	—— -	.47¾
Modicol A	lb.	.12 -	.15
B	lb.	.35 -	.40
RS-968	lb.	.38 -	.38½
SS-24	lb.	5.80 -	6.90
66	lb.	5.70 -	6.20
Terpinol Prime No. 1	lb.	.39 -	.54

ANTIOXIDANTS

Agebest 1293-22A	lb.	1.90 -	2.00
Agerite Alba	lb.	2.35 -	2.45
Gel	lb.	.64 -	.66
Hipar	lb.	.98 -	1.00
H. P.	lb.	.72 -	.74
Powder	lb.	.52 -	.54
Resin	lb.	.75 -	.77
Resin D	lb.	.52 -	.54
Stalite	lb.	.52 -	.54
White	lb.	1.45 -	1.55
Akroflex CD	lb.	.72 -	.74
Aminox	lb.	.52 -	.54
Antioxidant 2246	lb.	1.65 -	1.68
Antox	lb.	.52 -	.54
Aranox	lb.	—— -	3.25
Benzoquinone	lb.	1.50 -	1.75
Betanox Special	lb.	.80 -	.82
B-L-E	lb.	.52 -	.54
Carvacrol	lb.	—— -	.78
Deenax	lb.	.95 -	1.05
Di-tert-Butyl-para-Cresol	lb.	.91 -	.95
Eugenol C-95%	lb.	3.34 -	3.54
Flectol H	lb.	.52 -	.59
Flexamine	lb.	.72 -	.74
Neozone A	lb.	.56 -	.58
C	lb.	—— -	.69½
D	lb.	.52 -	.54

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ANTIOXIDANTS (Cont'd)

Octamine	lb.	.52	.54
Oxidex	lb.	——	3.60
PDA-10	lb.	.39	.41
Permalux	lb.	——	2.17
Polygard	lb.	.52	.54
Santoflex AW	lb.	.78	.85
B	lb.	.52	.59
BX	lb.	.63	.70
35	lb.	.72	.79
Santovar-A	lb.	1.50	1.57
O	lb.	1.30	1.37
Santowhite Crystals	lb.	1.60	1.67
Santowhite L	lb.	.50½	.57½
MK	lb.	1.29	1.36
S.C.B. (tons)	lb.	.32	.34
Sequestrene AA	lb.	——	1.00
NA2	lb.	——	.82
NA3	lb.	——	.80
Stabilite	lb.	.53	.55
Alba	lb.	.72	.77
L	lb.	.60	.62
White	lb.	.53	.55
Stabilizer No. 1	lb.	——	1.55
Stabilizer No. 9-A	lb.	.80	1.05
Styphen I	lb.	.49½	.54½
Sunolite	lb.	.21	.23
Tannic Acid, Tech.	lb.	.46	.48
Thermoflex A	lb.	.98	1.00
V-G-B	lb.	.52	.54
Wing-Stay S	lb.	.49½	.50½

ANTI-SCORCHING AGENTS

Armeen HT	lb.	.34	.42
Benzoic Acid—Tech.	lb.	——	.43
Good-rite Vultrol	lb.	.60	.62
Sodium Acetate 60-62% Crystals	lb.	.08	.08½

ANTISEPTICS AND GERMICIDES

Arquad S	lb.	.22	.25
Formaldehyde (dms.)	lb.	.066	.071
G-4 (bbls.)	lb.	1.04	1.19
G-11	lb.	2.60	2.75
Nuodex 100 S.S. (dlvd.)	lb.	——	1.10
Nuodex 100 W.D. (dlvd.)	lb.	——	1.25
Nuodex Zinc 8% (dms.) (dlvd.)	lb.	.24	.28
Ortho Cresol (26°-27°)	lb.	——	.201
Retarder D	lb.	.42	.50
Soligen Drier—Copper 8% (dms.)	lb.	.20¼	.21½
Zinc 8% (dms.)	lb.	.22¼	.23½
Vancide	lb.	——	.80

ANTI-WEBBING AGENTS (for Latex)

Webnix 34	lb.	1.50	2.25

AROMATICS (DEODORANTS)

Airkem 115	gal.	——	6.50
122	gal.	——	6.50
186	gal.	——	6.50
Alamask AA	lb.	——	3.00
AD	lb.	——	2.00
AF	lb.	——	2.50
AO	lb.	——	1.50
AR	lb.	——	.50
BG	lb.	——	1.15
BGM	lb.	——	.60
BW	lb.	——	1.85
BWM	lb.	——	2.00
CY	lb.	——	2.40
DL	lb.	——	1.95
H	lb.	——	5.50
LD	lb.	——	.75
LF	lb.	——	4.90
ND	lb.	——	2.75
O	lb.	——	6.50
OS	lb.	——	5.25
Bouquet 149	lb.	——	3.00
Coumarin	lb.	2.95	3.00
Curodex 19	lb.	4.75	4.90
188	lb.	5.75	5.90
198	lb.	6.75	6.90
Deodorant 65	lb.	——	1.85
Deodorant L-37	lb.	2.00	2.40
L-44	lb.	2.50	2.90
N.L.T.X.	lb.	1.85	2.15
Deodorant Oil GD 3427	lb.	1.70	2.00
GD 6422	lb.	2.00	2.50
GD 6423	lb.	1.60	1.90
GD 6575	lb.	2.45	2.95
GD 31063	lb.	2.65	3.15
Latex Perfume 5	lb.	——	3.25
6	lb.	——	7.50
9	lb.	——	.65
Naugaromes (dms.)	lb.	.60	3.00
Neutroleum Delta	lb.	——	2.60
Gamma	lb.	——	3.60
Parador A	lb.	1.95	2.25
C	lb.	2.75	3.25
E	lb.	.25	.55
GD 5280	lb.	2.00	2.50
GD 5348	lb.	1.90	3.25
Perfume Oil Bouquet Vanilla M	lb.	2.40	2.75
Rodo No. 0	lb.	4.00	4.50
No. 10	lb.	5.00	5.50
Rubbarome (dms.)	lb.	.60	3.80
Rubber Perfume 12	lb.	——	2.85
Russian Leather 7	lb.	——	4.35
Vanillin	lb.	3.00	3.05

BLOWING AGENTS

Ammonium Bicarbonate	cwt.	——	7.00
Blowing Agent CP-975	lb.	——	.35
Celogen	lb.	——	1.95
Sodium Bicarbonate, U.S.P. (c.l. bags)	cwt.	——	2.10
Sponge Paste	lb.	——	.20
Unicel	lb.	——	.90
ND	lb.	——	.86
S	lb.	——	.20
Urea	lb.	.04¼	.04¾

BONDING AGENTS

Braze	gal.	6.00	7.50
Durez 12987	lb.	.48	.53
Kalabond	gal.	6.50	7.75
MDI	lb.	4.00	5.00
50	lb.	2.00	2.50
Penacolite B1A	lb.	——	.88
Pliobond 20	gal.	2.91	4.23
30	gal.	3.65	4.97
Reanite	gal.	6.75	7.25
Rez Compounds	gal.	1.30	2.85
TDI	lb.	4.00	5.00
Thixons	gal.	3.30	9.00
Ty-Ply Q (BN & S)	gal.	6.75	8.00

COAGULANTS

Acetic Acid—56% (bbls.)	cwt.	9.00	11.00
Glacial 99½% (dms.)	lb.	.09	.11
Calcium Nitrate, Tech. Crystals	lb.	.07	.11½
Hydroxyacetic Acid—70% (dms.)	lb.	——	.084
Zinc Nitrate, Tech.	lb.	——	.22½

COLORING AGENTS

Black

Aquablak B (also M, R)	lb.	.08	.11¼
Aquablak S	lb.	.11	.11½
Black Shield 4-35 (dms.)	lb.	——	.0825
Carbon Black—See *Reinforcing Agents*			
Lampblack No. 10	lb.	.06	.09
Mapico Black Iron Oxide (50 lb. bags)	lb.	.11¾	.12
Pure Black Iron Oxide	cwt.	11.75	12.00

Blue

Blue GD, Dispersed	lb.	——	4.55
Cooke M.B. Blue	lb.	2.45	2.85
Milori Blue	lb.	——	.45
Monastral Fast Blue CPL	lb.	——	1.77
PCD, Dispersed	lb.	——	2.50
Peacoline Blue	lb.	——	3.85
Ramapo Blue	lb.	3.40	3.45
Rubber Blue X-1999	lb.	——	1.70
Syntheline Blue	lb.	——	3.85
Stan-Tone MBS	lb.	1.55	4.55
GPE	lb.	——	2.50
LPC	lb.	——	4.05
PC	lb.	——	2.40
PDS	lb.	——	2.00
Ultramarine	lb.	.14	.30
Vansul Blue M.B.	lb.	.90	2.65
Victoria Blue BP-262-D	lb.	2.25	2.30

Brown

Brown Iron Oxide	lb.	.11¾	.12
Mapico Brown (50 lb. bags)	lb.	.12¾	.13

Green

Cooke M.B. Green	lb.	1.45	3.20
Filo Green	lb.	——	.32
Green Chromium Oxide, Pure	lb.	——	.38
Green Chromium Oxide, Pure, Hydrated	lb.	——	1.05
Green FD, Dispersed	lb.	——	2.05
Monastral Fast Green GSD, Dispersed	lb.	——	3.20
GSL	lb.	——	1.97
Permanent Green CP-594	lb.	——	1.35
Pigment Green B	lb.	——	1.35
GL-652D	lb.	.80	.85
Ramapo Green	lb.	——	4.00
Rubber Green X-1292	lb.	——	1.15
Stan-Tone MBS	lb.	1.75	3.60
GPE	lb.	——	3.00
LPC	lb.	——	4.60
PC	lb.	——	3.00
PDS	lb.	1.90	2.20
Vansul Green M.B.	lb.	1.05	3.05

Maroon

Stan-Tone MBS	lb.	——	3.50
LPC	lb.	——	2.90
Vansul Maroon M.B.	lb.	1.05	2.80

Orange

Molybdate Orange	lb.	——	.44
Orange OD, Dispersed	lb.	——	2.75
Rubber Orange X-2065	lb.	——	3.00
Stan-Tone MBS	lb.	1.25	2.75
GPE	lb.	——	1.20
LPC	lb.	.70	3.35
PC	lb.	——	1.05
PDS	lb.	——	1.20
Vansul Orange M.B.	lb.	2.25	2.60

COLORING AGENTS (Cont'd)

Red

Antimony Trisulfide	lb.	.72	.78
R. M. P. Sulfur Free	lb.	——	.78
R. M. P. No. 3	lb.	——	.72
Cadmium Red	lb.	.95	1.25
Cadmolith Red (bbls.)	lb.	1.75	2.00
Cooke M.B. Red	lb.	.95	3.15
Graphic Red (dlvd.)	lb.	——	.85
Indian Red, American, Pure	lb.	.12¼	.12½
Doxco (English)	lb.	.11½	.11¾
Mapico Reds (50 lb. bags)	lb.	.12¼	.12½
Oximony Iron Oxide	lb.	——	.09
Red Iron Oxide, Light	lb.	.12¼	.12½
Red PBD, Dispersed	lb.	——	1.75
2BD, Dispersed	lb.	——	1.80
2BL	lb.	——	1.47
PBL	lb.	——	1.65
Rubanox Red CP-762 (dlvd.)	lb.	——	1.40
Rubber Red CP-339 (dlvd.)	lb.	——	1.10
Rubber Red X-1148	lb.	——	.79
Rubbered	lb.	.11½	.11¾
Solfast Red	lb.	1.40	1.95
Stan-Tone MBS	lb.	1.20	4.00
GPE	lb.	1.65	2.00
LPC	lb.	1.05	2.20
PC	lb.	1.45	2.40
PDS	lb.	1.40	1.55
Sun Burnt Red	lb.	.11½	.11¾
Vansul Red M.B.	lb.	.95	3.40
Watchung Red	lb.	1.90	2.00

White—Lithopone

Albalith	lb.	.0750	.0850
Cryptone BT	lb.	.10	.11
Eagle-Picher	lb.	.0750	.0825
Permolith	lb.	.0750	.0825
Ponolith	lb.	.0750	.0825
Sunolith	lb.	.0750	.0825

White—Titanium Pigments

Ti-Cal	lb.	.08	.08¾
Ti-Pure	lb.	.21	.24
Titanox A—all grades (dlvd.)	lb.	.21	.22
RA (dlvd.)	lb.	.23	.24
RA-10 (dlvd.)	lb.	.23	.24
RA-NC (dlvd.)	lb.	.23	.24
RC (dlvd.)	lb.	.08¼	.08¾
RC-HT (dlvd.)	lb.	.08	.08½
Unitane O-220	lb.	.195	.205
OR-250	lb.	.215	.225
Zopaque	lb.	.21	.22
R	lb.	.23	.24

White—Zinc Oxide (American Process)

AZO-ZZZ 11 (and 22, 23, 44 55)	lb.	.1400	.1500
Eagle-Picher AAA	lb.	.1400	.1500
Horse Head Special	lb.	.1425	.1525
XX	lb.	.1400	.1500
XX-505	lb.	.1550	.1650
Protox 166	lb.	.1400	.1500
167	lb.	.1400	.1500
St. Joe Black Label	lb.	.1400	.1500
Green Label	lb.	.1400	.1500
Red Label	lb.	.1400	.1500

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	——	13

White—Zinc Oxide (French Process)

Florence Green Seal	lb.	.1575	.1675
Red Seal	lb.	.1525	.1625
White Seal	lb.	.1625	.1725
Kadox 25	lb.	.1625	.1725
Kadox 15, 17 and 72	lb.	.1400	.1500
Protox 168	lb.	.1400	.1500
169	lb.	.1400	.1500
U. S. P.	lb.	.1725	.1825

White—Zinc Sulfide

Cryptone ZS	lb.	.2530	.2630

Yellow

Benzidine Yellow	lb.	1.91	2.15
Cadmolith Yellow (bbls.)	lb.	——	1.20
Chrome Yellow	lb.	——	.31
Cooke M.B. Yellow 405	lb.	——	1.70
Iron Oxide, Pure	lb.	.10	.10¼
Mapico Yellow (50 lb. bags)	lb.	.1000	.1025
Rubber Yellow X-1940	lb.	——	1.91
Stan-Tone MBS	lb.	1.30	4.50
GPE	lb.	——	4.50
LPC	lb.	——	2.25
PC	lb.	.85	4.50
PDS	lb.	1.25	1.75
Toluidine Yellow YL-660 D	lb.	1.15	1.20
Oximony Iron Oxide	lb.	——	.0634
Vansul Yellow M.B.	lb.	1.05	1.85
Yellow GD, Dispersed	lb.	——	2.15
GL	lb.	——	1.80
Zinc Yellow	lb.	——	.25

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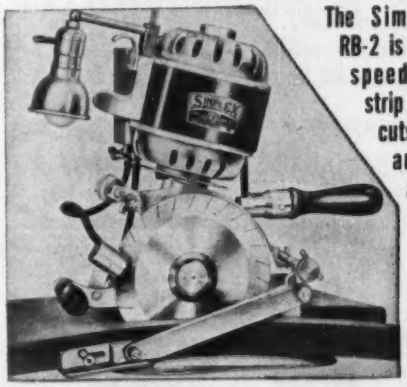

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DISPERSING AGENTS

Anchoid*	lb.	.24	.25
Armeen 18	lb.	.42	.50
Blancol Conc. Powder	lb.	.15½	.17½
Darvan No. 1 (and No. 2)	lb.	.22	.30
Daxad 11 (21, 23)	lb.	.08	.35
Dispersaid	lb.	1.25	1.35
Emcol K-8300 (dms.)	lb.	.19	.20
Furala	lb.	.06½	.07½
Halloid	lb.	.04½	.05½
Lomar PW	lb.	—	.16
Marasperse C	lb.	.06½	.06¾
CB	lb.	.12¼	.13¼
N	lb.	.09½	.10½
Modicol C	lb.	.08	.12
Rubbex	lb.	.267	.285
Stablex B	lb.	.50	.95
Stan-Chem BQC	lb.	.12¼	.17¼
1067	lb.	—	.13½
1471	lb.	.1687	.2187
2251	lb.	.12¼	.17¼
Trenamine D-25	lb.	.32½	.36
Triethanolamine (drums)			
(dlvd.)	lb.	.24½	.27¼
Yelkin TT	lb.	.13	.17
Zinsper	lb.	—	.15

EXTENDERS

Advagum 1098	lb.	—	.64
Arcco 1071-13B	lb.	.14½	.15½
1073-18B	lb.	.13½	.14½
1294-36B	lb.	.11½	.12½
Bunaweld Polymer No. 780	lb.	—	.22
No. 5514	lb.	—	.35
D-92 (and D-93) (dms.)	lb.	—	.12
Car-Bel-Ex-A and B	lb.	—	.14
Extender 600	lb.	—	.1480
Polyco 418	lb.	.17	.18
PR-162 Latex Extender	gal.	—	1.55
Synprolac	lb.	.16	.23
Synprowax	lb.	—	.23
Vistanex	lb.	—	.45

FILLERS (Inert and Reinforcing)

Abrasives			
Carbonite	lb.	.19½	1.30
Lionite	lb.	.14	1.20
Pumice	lb.	.03	.05
Aluminum Hydrate	lb.	.07	.10
Aluminum Silicate			
Marter White	ton	18.50	30.00
Barium Carbonate (l.c.l.)	ton	95.50	-100.00
Barytes			
No. 1 Floated, White	ton	37.85	53.60
No. 2 Floated, Unbleached	ton	35.85	51.60
No. 22 Barytes (c.l.)	ton	—	20.00
Foam A	ton	—	37.60
Bentonite (c.l.)	ton	—	12.50
Argosite Clay (c.l.)	ton	—	12.50
Bennett Clay (c.l.)	ton	—	32.50
SPV Volclay (c.l.)	ton	—	12.50
White Hi-Gel	ton	—	65.90
Blanc Fixe	ton	72.50	-120.00
Calcium Carbonate			
Atomite (c.l.)	ton	—	30.00
B.I. White No. 1 (c.l.)	ton	—	7.50
B.I. White No. 2 (c.l.)	ton	—	7.00
Blue Star XX	ton	—	15.50
Calcene NC	ton	72.50	92.50
TM	ton	75.00	95.00
Calwhite	ton	—	17.00
Camelwite	ton	—	30.00
Duramite	ton	—	15.00
Gamaco	ton	—	30.00
Kalite (c.l.)	ton	—	50.00
Laminar	ton	—	30.00
Lesamite (c.l.)	ton	—	27.50
Millical (c.l.)	ton	—	32.50
Multifex	ton	—	-120.00
M	ton	—	-110.00
Non-Fer-Al	ton	—	25.00
Purecal M	ton	51.75	66.75
SC	ton	110.00	-125.00
T	ton	110.00	-125.00
U	ton	120.00	-135.00
Rambo No. 1	ton	—	11.00
Sierracal	ton	15.00	18.50
Snowflake	ton	17.00	18.00
Super Multifex	ton	—	-160.00
Surfex (c.l.)	ton	—	35.00
Suspenso (c.l.)	ton	—	30.00
Witcarb B	ton	51.75	66.75
P	ton	110.00	-125.00
R	ton	120.00	-135.00
R-12	ton	46.50	66.75
York White	ton	—	9.50
Calcium Silicate			
Silene EF	ton	120.00	-140.00
Calcium Sulfate, Anhydrous			
Snow White Filler	ton	—	20.50
Calcium Sulfate, Hydrous			
Terra Alba No. 1	ton	12.00	14.40
Chalk Whiting (l.c.l.)	lb.	.0150	.0175
Recco Paris Whiting	ton	—	33.00
Clay			
Aiken Clay	ton	—	14.00
Alsilite (c.l.)	ton	20.00	45.00
Alsite (c.l.)	ton	—	14.00
Aluminum Flake	ton	20.00	60.00
Buca (c.l.)	ton	—	45.00

FILLERS (Cont'd)

Clay (cont'd)			
Burgess No. 20	ton	—	35.00
No. 30	ton	—	37.00
Burgess Iceberg	ton	—	50.00
Catalpo (c.l.)	ton	—	35.00
Champion	ton	—	14.00
C.S.D. (c.l.)	ton	—	13.50
Crown	ton	—	14.00
Dixie (c.l.)	ton	—	14.00
Franklin Clay (c.l.)	ton	—	13.50
Harwick Clays	ton	15.50	50.00
Hi-White R	ton	—	13.50
Hydratex R	ton	—	28.00
Kaolloid Clay (c.l.)	ton	—	10.50
McNamee (c.l.)	ton	—	13.50
Paragon	ton	—	13.50
Pigment 5	ton	23.50	26.50
Pigment 10	ton	20.00	22.50
Pigment 22	ton	18.00	22.50
Pigment 33	ton	—	37.00
Recco (c.l.)	ton	—	14.00
Snobrite	ton	—	12.50
Suprex	ton	—	14.00
Whitetex (c.l.)	ton	—	50.00
Windsor Clay (c.l.)	ton	—	14.00
Diatomaceous Earth	ton	30.00	50.00
Kaylorite (c.l.)	ton	—	30.00
Lorite	ton	—	30.00
Flock			
Cotton, white and colored	lb.	.13	.32
Filfloc F 40-9000	lb.	—	.16
Filfloc F 6000	lb.	—	.40
Polycel	ton	110.00	-210.00
Rayon, bleached or dyed	lb.	.82	1.25
Rayon, grey	lb.	—	.18
Rayon, pink	lb.	—	.18
Solka-Floc (l.c.l.)	lb.	.07	.16
Glue, Bone (dlvd.)	lb.	.18	.20½
Leather, Shredded	lb.	.05	.17
Lignin	lb.	.03	.06
Indulin	lb.	.09	.10
Limestone, Pulverized	ton	3.00	4.75
Georgia Marble No. 10	ton	—	10.00
Industrial Filler No. 100	ton	—	5.75
Micro Velva	ton	45.00	48.00
Velvet Filler, Superfine	ton	—	27.00
Magnesium Carbonate	lb.	.0950	.1050
K & M Clearcarb	lb.	.1225	.1275
Magnesium Oxide	lb.	.05	.06
Magnesium Silicate	ton	18.00	35.00
Airex	ton	25.00	27.00
Asbestol Regular	ton	—	25.00
Blue Star Talc	ton	—	23.00
French Talc	ton	—	59.00
L.S. Silver	ton	—	26.50
Sierra White	ton	18.75	21.25
Soapstone	ton	—	9.90
No. 367 Talc	ton	—	13.00
Mica	lb.	.01¼	.07½
Concord	lb.	.07½	.08¼
Micro-Mica	lb.	.07½	.08¼
Mineralite (c.l.)	ton	30.00	85.00
Silversheen	lb.	.07½	.08¼
Triple A Mica (c.l.)	ton	—	25.00
Vermiculite	lb.	—	.11
Wet Ground Biotite Mica	lb.	.06¼	.07
Wet Ground Mica No. 160	lb.	.07½	.08¼
Pyrophyllite			
No. 261	ton	—	11.50
Pyrax A (c.l.)	ton	—	13.50
WA (c.l.)	ton	—	16.00
Sawdust, Graded	ton	14.00	35.00
Silica	ton	16.00	27.00
Blue Star	ton	—	20.60
Slate, Powdered (l.c.l.)	ton	15.00	20.00
Lo-Micron Slate Flour	lb.	—	.04½
No. 133 Slate Flour	ton	—	4.55
Talc, Domestic	ton	10.00	27.00
No. 1600	ton	—	70.60
No. 1768	ton	—	13.00
Nytal 200	ton	—	25.00
300	ton	—	36.00
Walnut Shell Flour	ton	45.00	-111.00
Stan-Shell	ton	63.00	-126.00
Whiting, Commercial	ton	—	7.00
Camel-Carb	ton	—	10.00
C-C-O White	ton	—	18.00
Georgia Marble No. 15	ton	—	15.00
No. 16	ton	—	16.00
Keystone (c.l.)	ton	—	16.00
Snowflake (c.l.)	ton	—	18.00
Stan-White 325	ton	8.50	11.10
Verac (c.l.)	ton	—	8.50
Welco (c.l.)	ton	—	8.50
York White R (c.l.)	ton	—	8.50
Wood Flour	ton	24.00	48.00

FINISHING MATERIALS, SURFACE

Beaco Finishes	gal.	2.10	2.35
Black Out	gal.	4.50	8.00
Shellac, Orange Gum	lb.	.30	.40
VanWax	gal.	1.45	1.50

FLAME RETARDANTS

Chlorowax 70	lb.	.18	.19
Halowax	lb.	.27	.42
Zinc Borate 3167	lb.	.1920	.2020
Zytox	lb.	.49	.78

LUBRICANTS, MOLD

Aquadag	lb.	3.50	4.00
Aquarex D	lb.	—	.80
L	lb.	—	.94
ME	lb.	—	.97
MDL	lb.	—	.33
WAQ	lb.	—	.28
Akro Gel	lb.	—	.165
Borax, Granular (l.c.l.)	ton	81.00	86.00
Carbowax 4000	lb.	.33	.34
CD Mold Release A	gal.	—	7.00
Colite Concentrate (dms.)	gal.	—	.90
Concentrex	lb.	—	.25
D.C. 7 Compound	lb.	5.13	6.50
D.C. Emulsion No. 7	lb.	1.59	2.07
No. 8	lb.	1.46	1.98
No. 35	lb.	1.46	3.50
No. 35A	lb.	1.46	3.50
No. 35B	lb.	1.46	3.50
D.C. Mold Release Fluid	lb.	3.70	6.00
Dipex	lb.	.14	.18
Dri-Lube	lb.	—	.22
Glydag	lb.	1.30	2.00
Hawkeye Flake (dlvd.)	lb.	.08¼	.10¼
Kokobace	lb.	—	.12
Lubrex	lb.	.25	.30
Lubri-Flo	gal.	10.00	12.00
Migralube	lb.	—	.35
Mold Lubricant No. 72			
Conc.	gal.	2.50	4.00
No. 735	gal.	1.26	2.75
No. 769	gal.	1.20	2.60
No. 880	gal.	1.12	2.50
No. 856	gal.	2.00	4.00
Moldeze No. 3	gal.	5.00	6.00
Mold-Brite	gal.	—	1.50
Mold-Slick	lb.	.253	.271
Mold-White	gal.	—	2.00
Monopole Oil MD	lb.	—	.23
Nopcolube	lb.	—	.15
Orvus WA Paste (dms.)	lb.	—	.25
Prodag	lb.	.28	.42
Purity Flake (dlvd.)	lb.	.11	.14
Rubber-Flo	gal.	1.25	1.60
Rubber-Glo	gal.	—	.94
Rusco Mold Paste	lb.	—	.25
Sericite (l.c.l.)	ton	65.00	75.00
SF-92	lb.	3.70	4.22
SM-33	lb.	1.50	1.68
55	lb.	1.46	2.00
61	lb.	1.46	1.68
Thermalube	lb.	—	.13¾
Ucon Lubricants	lb.	.26½	.35
Ulco Mold Soap	lb.	.12	.23

LUBRICANTS, RUBBER

Diglycol Stearate Neutral (and SE) (dms.)	lb.	—	.38
Emcol DS-50	lb.	—	.38
RDH-5	lb.	—	.30
Extrud-o-Lube	gal.	—	1.54
G.B. Naphthenic Neutrals	gal.	.11	.18
Latex-Lube GR (dlvd.)	lb.	.19¼	.20
Pigmented (dlvd.)	lb.	.18¾	.19¾
RS	lb.	—	.16½
Liqui-Lube (dlvd.)	lb.	—	.16¼
NF (dlvd.)	lb.	—	.16¼
NT (dlvd.)	lb.	—	.16¾
Propylene Stearate (dms.)	lb.	.68	.78

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.37	.42
Calcium Stearate	lb.	.35	.40
D.C. 4 Compound	lb.	5.13	6.50
D.C. 200 Fluid	lb.	3.70	6.00
Glycerized Lubricant	gal.	—	1.48
Hydro-Zinc	lb.	—	.20
Polyethylene Glycol	lb.	.26½	.29
Rexanol	lb.	—	.11
Separex	lb.	—	.25
Stock-Lube	lb.	—	.19
Slab-Dip	lb.	—	.15
Wet-Zinc	lb.	—	.22¼
Zinc Stearate	lb.	.37	.42
Z.S.D. Dispersion	lb.	—	.20

MOLD CLEANERS

Actusol (dlvd.)	gal.	1.45	1.65
Alkon (dlvd.)	lb.	.16	.16½
Metso 99	cwt.	4.25	6.50
Metso Granular	cwt.	3.80	6.05
Rubber-Sol	gal.	2.97	3.97
Shelblast	ton	80.00	-165.00
Sprex A.C. (dlvd.)	lb.	.17¼	.18¼

PEPTIZING AGENTS

Peptizer P-12	lb.	.95	1.25
Pepton 22 Plasticizer	lb.	.79	.82
RPA 2	lb.	—	.78
3	lb.	—	.47
3 Conc.	lb.	—	.97
3-RO	lb.	—	.50½
5	lb.	—	.59

PLASTICIZERS & SOFTENERS

AA (dms.)	lb.	.24½	.29
Acto 500	lb.	—	.09
Adipol BCA (dms.)	lb.	.44½	.45
2EH	lb.	.44¾	.45¾
10A	lb.	.44¾	.45¾
ODY	lb.	.51¾	.52¾
American Pine Tar	lb.	.0410	.0678
Arneel	lb.	.22	.37
Arolene 1980 (c.l.)	lb.	—	.10

THE ALUMINUM FLAKE COMPANY
AKRON 14, OHIO

Manufacturers of
ALUMINUM FLAKE

A colloidal hydrated aluminum silicate. Reinforcing agent for natural, synthetic and reclaimed rubber.

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- Normal Latex
- GR-S Latex Concentrate
- Natural and Synthetic Latex Compounds
- Plastisols

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- Dibutyl Phthalate — (DBP)
- Triethylene Glycol Dicaprylate — (TG-8)
- Di-iso-octyl Phthalate — (DIOP)
- Di-iso-octyl Adipate — (DIOA)
- Iso-octyl Palmitate — (O-16)
- Iso-octyl Iso-decyl Phthalate — (ODP)

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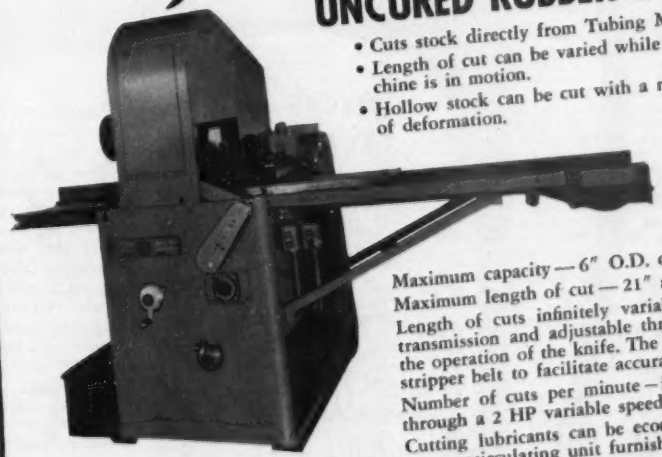
for **CUTTING CURED and UNCURED RUBBER STOCKS**

- Cuts stock directly from Tubing Machine.
- Length of cut can be varied while the machine is in motion.
- Hollow stock can be cut with a minimum of deformation.



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- GREATLY IMPROVED CUTTING ACCURACY
- LESS MAINTENANCE
- LESS WEAR ON MACHINE

Maximum capacity — 6" O.D. or 12" wide thin flat stock.
Maximum length of cut — 21" at lower speeds.
Length of cuts infinitely variable through a positive variable transmission and adjustable throw eccentric, synchronized with the operation of the knife. The machine is equipped with driven stripper belt to facilitate accurate feeding of the stock.
Number of cuts per minute — infinitely variable from 15 to 120 through a 2 HP variable speed main drive.
Cutting lubricants can be economically applied through a separate recirculating unit furnished in addition if desired.

Anti-friction bearings throughout, and drives units are completely enclosed and run in oil for efficient lubrication.

Completely equipped with 4 ft. long input and 3 ft. long take-off conveyors.

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175 Osborne Street Bridgeport 5, Conn.

Pacific Rep. Lombard Smith, Los Angeles, Cal.
NEW YORK & EXPORT OFFICE 261 Broadway

PLASTICIZERS & SOFTENERS (Cont'd)

Aromatic Tar	gal.	.0573	.1973
Bardol	lb.	.02¼	.03¼
B	lb.	.06¼	.06½
Bayol D	gal.	—	.382
F	gal.	—	.52
Beeswax, Bleached	lb.	.85	.90
Yellow Refined	lb.	.70	.75
Bondogen	lb.	.55	.60
B.R.C. No. 20	lb.	.0150	.0175
B.R.H. 2	lb.	—	.0213
BRS 700	lb.	.02	.0285
B.R.T. 3	lb.	.0255	.0265
4	lb.	.0250	.0260
7	lb.	.03	.031
B.R.V.	lb.	.0475	.0565
Bunarex Resins	lb.	.06½	.07½
Bunatak AH	lb.	.08	.09
U	lb.	—	.17½
No. 90	lb.	—	.09
No. 210	lb.	—	.14
Burgundy Pitch	lb.	.0843	.0888
Butac	lb.	.11¾	.12¾
Butoxyethyl Diglycol Carbonate	lb.	.40	.41
Butyl Benzyl Sebacate	lb.	.61	.63¼
Butyl Carbitol Perlargonate (dms.)	lb.	—	.64½
Butyl Cellosolve Perlargonate (dms.)	lb.	—	.68
Butyl Palmitate	lb.	—	.27½
Butyl Roleate	lb.	.176	.18
Butyl Stearate-CP (dms.)	lb.	.27¾	.28¾
BWH-1	lb.	.16	.17
Cabflex DCP (dms.)	lb.	.36¾	.37½
DDA (dms.)	lb.	.47¾	.48¾
DDP (dms.)	lb.	.39¾	.40¾
Di-BA (dms.)	lb.	.41	.42
Di-OA (dms.)	lb.	.44¾	.45¾
Di-OP (dms.)	lb.	.38¾	.39¾
Califlux 510, 550	lb.	.02½	.03¾
G.P.	lb.	.0125	.02
R-100	lb.	.04½	.05¼
TT	lb.	.02	.02¼
Candelilla Wax Prime	lb.	.75	.78
Capryl Benzyl Sebacate	lb.	.67¼	.70¼
Carbonex	lb.	.0325	.0375
S Flakes	lb.	.04¾	.05
S Plastic	lb.	.0410	.0460
644	lb.	.0375	.0425
Carbowax 4000 (drums)	lb.	.33	.34
Cardolite 615	lb.	.33¼	.36¼
816	lb.	25¾	.28¾
Carnauba Wax, Crude	lb.	.98	1.10
Refined	lb.	1.05	1.10
Yellow	lb.	1.30	1.35
Castorwax	lb.	.3260	.3380
Celluflex (dms.)	lb.	.34¾	.35¾
Ceresine Wax	lb.	.14	.26
Chlorowax 40	lb.	.14	.14¾
Contogum	lb.	.06¼	.10¼
CTLA Polymer	gal.	.20	.36
Cumar Resins	lb.	.03½	.14½
D.B.M.	lb.	—	.30
Degras, Common	lb.	.11	.14½
Diallyl Phthalate (dms.)	lb.	.51	.52
Dibenzyl Sebacate	lb.	.74	.76¼
Dibutoxethyl Sebacate	lb.	—	.563/4
Dibutyl Phthalate	lb.	.35¾	.36¾
Dibutyl Sebacate	lb.	.80	.82¼
Dicapryl Adipate	lb.	.40¼	.41¼
Dicapryl Phthalate	lb.	.36¾	.37¼
Dicapryl Sebacate	lb.	.66¾	.67¼
Di-Carbitol Phthalate (dms.)	lb.	.42	.42½
Dicyclohexyl Phthalate	lb.	—	.42
Diethyl Phthalate (t.c.)	lb.	.25	.27¼
Di-2-ethylhexyl Phthalate (t.c.)	lb.	—	.37
Dihexyl Adipate	lb.	.40¼	.41¼
Dihexyl Phthalate	lb.	.36¾	.37½
Dihexyl Sebacate	lb.	.73¾	.74¼
Diisobutyl Azelate	lb.	.54	.57
Di-iso-octyl Adipate (dms.)	lb.	.44¾	.45½
Di-iso-octyl Phthalate (t.c.)	lb.	.38¾	.49½
Dimethyl Phthalate (c.)	lb.	.27½	.30¼
Dimethyl Sebacate	lb.	1.26¾	1.27½
Dinopol	lb.	.39¾	.40¼
Dioctyl Phthalate (dms.)	lb.	.38¾	.39¼
Dioctyl Sebacate (dms.)	lb.	.71	.73¼
D.I.O.P. (dms.)	lb.	.38¼	.39¼
Dipolymer Oil	gal.	—	.33
Dispersing Oil No. 10	lb.	.06	.06¼
Dutrex B	lb.	.02¼	.03¼
5 and 6	lb.	.020	.031
15E	gal.	.10	.20
20, 21, 22 and 25	lb.	—	.04
Elastex 10-P	lb.	.40	.42½
50-B	lb.	.34½	.37
DCHP	lb.	.42½	.43½
Estac	lb.	—	16
Ethox (dms.)	lb.	.45¼	.45¾
Flexol B-400	lb.	.28	.30
DOP	lb.	.37	.39¼
TOF	lb.	.46	.48¾
3GH	lb.	.44	.46
3GO	lb.	.53	.55
4GO	lb.	.35	.37¾
8HP	lb.	.36	.38¾
Flexricin P-1	lb.	.34¼	.36
P-4	lb.	.33½	.35
P-4C	lb.	.43¾	.45½
P-6	lb.	.38¾	.40
P-8	lb.	.33¼	.35
Fortex (dms.)	lb.	.12½	.14½
Galex W-100	lb.	.15½	.19¼

PLASTICIZERS & SOFTENERS (Cont'd)

G. B. Light Process Oil	lb.	.025	.0325
Medium Process Oil	lb.	.03½	.04¼
G. B. Naphthenic Neutrals	gal.	.11	.18
Good-Rite GP233	lb.	.43	.45¾
GP261	lb.	.37	.39¾
Harflex 500 (dms.)	lb.	.37¾	.38¾
Herron-H.T.	gal.	.16	.27
Herron-Plas	lb.	—	.03¾
Herron-Wax	lb.	.05¼	.06
No. 23	lb.	.08¼	.08¾
No. 24	lb.	.07¼	.07¾
HSC No. 13	lb.	.27	.30
Hylene B	lb.	.45	.50
C	lb.	.41	.46
D	lb.	.47½	.52½
Indonex 632½ (633½, 634½, 637½)	gal.	.11	.17
Kapsol	lb.	.34	.35
Kenflex	lb.	.18	.27
Kessco flex 101 (dms.)	lb.	—	.39
102 (dms.)	lb.	—	.32½
103 (dms.)	lb.	—	.41½
104 (dms.)	lb.	—	.48
105 (dms.)	lb.	—	.33¼
105 (dms.)	lb.	—	.35½
KP 23 (dms.)	lb.	.31	.32
70 (dms.)	lb.	.37¾	.38¼
90 (dms.)	lb.	.46¾	.47¾
120 (dms.)	lb.	.52	.52½
140 (dms.)	lb.	.47¾	.48¼
201 (dms.)	lb.	.54¾	.55¾
220 (dms.)	lb.	.34¾	.35¾
504 (dms.)	lb.	.35¾	.36¼
555 (dms.)	lb.	.33	.33½
Kremol 40	gal.	.36	.46
50	gal.	.39	.49
Kronisol (drums)	lb.	.37¾	.38¼
Kronitex AA (dms.)	lb.	.34¾	.35¾
I (dms.)	lb.	.34¾	.35¾
Lanolin, Tech. Anhydrous	lb.	—	.31
Lead Oleate	lb.	—	.30½
Lindol (dms.)	lb.	.34¾	.35¾
2-Mercaptoethanol (drums)	lb.	1.25	1.50
Methox (dms.)	lb.	.41¾	.41¾
Methyl Laurate	lb.	.25	.27
Methyl Oleate	lb.	—	.20
Methyl Stearate (dms.)	lb.	—	.30
Modicol G	lb.	—	.23
R	lb.	—	.17
Montan Wax, Crude	lb.	.14	.15
Monten Wax	lb.	—	.30½
Morflex	lb.	.35	.51¾
Natac	lb.	.11¼	.12¼
Nebony Resins (dms.)	lb.	.04	.04½
Neolene 210 (t.c.)	lb.	—	.16
212 (t.c.)	lb.	—	.14
220 (t.c.)	lb.	—	.15
Nerium	lb.	—	.09
Nevillac Resins (dms.)	lb.	.28	.55
Neville Resins (dms.)	lb.	.12	.18
Nevindene Resins (dms.)	lb.	.15	.18
Nevinol (dms.)	lb.	—	.20
Nuba 1 (and 2) (dms.)	lb.	.05¼	.06¼
3X (dms.)	lb.	.07¾	.08¼
15 (and 30) Oil (dms.)	lb.	.36¼	.38
No. 480 Oil Proof Resin	lb.	—	.18
Ohopex Q10 (dms.)	lb.	.37¾	.38¼
R9 (dms.)	lb.	.37	.37½
Opalwax	lb.	.37	.38
Ortho-Nitrobiphenyl	lb.	.13	.15
Ozokerite Wax No. 64 White	lb.	.31	.32
Yellow	lb.	.25	.26
Palm Oil	lb.	—	.11
Paradene Resins (dms.)	lb.	.06½	.07½
Para Flux (dms.)	gal.	.1925	.2025
2016 (dms.)	gal.	.22	.23
Para Lube (t.c.l.)	lb.	.046	.048
Parmo	lb.	.06	.13½
Pepton 22 Plasticizer	lb.	.79	.82
Plo-16	lb.	.38¼	.40
Plasticizer ODN	lb.	.31	.37
Picco 10 (and 25)	lb.	—	.13½
75 (and 100)	lb.	—	.13
Rubber Resin 100	lb.	.1855	.1905
S.O.S.	gal.	—	.29
Piccocizer 30	lb.	—	.05½
Piccolastic A (and B, C, D, E)	lb.	.28½	.29
FT, FHF and FX	lb.	—	.1815
T-135	lb.	.22¾	.23¼
Piccolyte S Resins	lb.	.18½	.20
Piccolyte WW Resins	lb.	.45	.47
Piccoumaron Resins	lb.	.06¾	.17
Piccovar	lb.	.14½	.15
Piccovol	lb.	—	.02½
Pictar	gal.	—	.25
Pigmentar	lb.	.0410	.0678
Pigmentaroil	lb.	.0410	.0678
Plastac M	lb.	—	.09¼
Plasticizer 2286	lb.	—	.26¼
Plasticizer ODN	lb.	.31	.37
Plasticizer SC	lb.	.49	.52
Plasticizer W-13	lb.	.37	.38¼
Plasticizer XP-3	lb.	—	.50
Plastoflex 50	lb.	.34¼	.35¼
55	lb.	.33¼	.34¼
520	lb.	.37½	.38½
VS	lb.	.38¼	.39¼
Plastogen	lb.	.07¾	.08
Plastolein 9050 (c.l.)	lb.	.56	.59
9055	lb.	.35	.38
9058	lb.	.52	.55
9250	lb.	.27	.30
9715	lb.	.35	.38

PLASTICIZERS & SOFTENERS (Cont'd)

Plastone	lb.	.27	.30
Polycin 783	lb.	.29½	.30½
Polycizer 162	lb.	.37	.39¾
332	lb.	.43	.45¾
ED	lb.	—	.56¾
Polyco 438	lb.	.34	.36
Polymel C-130	lb.	.19½	.20½
D	lb.	.23½	.24½
6	lb.	.05¼	.07¾
Process Oil C-255 (c.l.)	gal.	—	.22
Propylene Stearate (dms.)	lb.	—	.32
PT 67 Light Pine Oil (dms.)	gal.	—	.60
101 Pine Tar Oil (t.c., dms.)	lb.	.0410	.0534
400 Pine Tar (600, 800) (t.c., dms.)	lb.	.0410	.0534
PX-104	lb.	.34	.42
PX-108	lb.	.38	.46
PX-208	lb.	.41½	.49
PX-404	lb.	.60	.68
Reogen	lb.	.13¼	.13½
465 Resin (dms.)	lb.	.07	.07½
Resin 731-C	cwt.	—	15.00
Resin C	lb.	.0225	.0310
Resinex	lb.	.03¼	.03¾
L-4	lb.	.02¾	.03
Rexflex	lb.	—	.15
Rosin Oil	gal.	.54	1.20
R.S.O. Softening Oil	lb.	.03	.05
Rubberol	lb.	—	.25¼
Rubtar	gal.	—	.40
Santicizer B-16	lb.	.52	.54¼
E-15	lb.	.51	.53¼
M-17	lb.	.48	.50¼
No. 107	lb.	.38¼	.39¼
No. 140	lb.	.33	.35¼
No. 141	lb.	.37	.39¼
No. 160	lb.	.31	.33¾
Sherolatum	lb.	.03½	.06
Softener No. 20	gal.	.09	.25
Staflex 1XA	lb.	.34	.36
Stanolind Petrolatum	lb.	.048	.086
Wax	lb.	.31	.32¾
Staybelite Resin (dms.)	cwt.	—	12.00
Sunny South Burgundy Pitch	lb.	.0980	.1025
Sunny South Pine Tar	lb.	.0410	.0678
Sunny South Rosin Oil	gal.	.58	.87½
Superla Wax	lb.	.27¾	.32
Syncera Wax	lb.	.19	.24
Syn Tac (c.l.)	gal.	—	.33
Synthetic Revertant Oil	lb.	—	.16
Tar, Refined	gal.	.12	.17
K-Tarnel NR (t.c.)	lb.	—	.0851
Terpene A	gal.	—	.65
TP-90B	lb.	—	.59
TP-95	lb.	—	.65
TP-98	lb.	—	.65
Triacetin	lb.	.34	.45
Tributyl Phosphate (dms.)	lb.	.51¼	.52¾
Tricresyl Phosphate (t.c.)	lb.	.33	.35¾
Turgum S	lb.	.10	.11
Vanadiset A	gal.	13	.20
Vistac No. 1	gal.	1.00	1.21
P	lb.	.18	.18½
Vopcolene 50	lb.	—	.37
Witresin—Granular	ton	41.00	43.00
Solid	ton	36.00	38.00

PROCESSING AIDS

Calcium Riconoleate	lb.	—	.56
Castor Oil, Processed (dms.)	lb.	.27	.28½
Refined (dms.)	lb.	.3260	.3330
Dutrex 7	lb.	.12	.20
ELA	lb.	—	.82
Emcol MAS	lb.	—	.44
Millrex	lb.	—	.15
Resin No. 510	lb.	.13½	.16½
Zyrox	lb.	.50	.79

PROTECTIVE & STABILIZING AGENTS

Acacia	lb.	.12¼	.21
Alpha Protein	lb.	.24	.28
Ammonium Alginate	lb.	—	.95
Aroostocrat	lb.	—	.07½
Carob Bean Flour	lb.	—	.46
Casein	lb.	.28	.38
Emcol K-8300 (dms.)	lb.	.19	.20
Ethylene Diamine 68%	lb.	.44	.47
Gum Arabic	lb.	—	.19
Karaya Gum	lb.	—	.28
Locust Bean Gum	lb.	—	.31
Prosein	lb.	.0600	.0630
Rex Compound No. 2801	lb.	—	.15
Stablex B	lb.	.50	.95
K	lb.	.27	.35

RECLAIMING AGENTS

Amalgamator Z-4		—	.33
Armeen C	lb.	.50	.58
T	lb.	.42	.50
No. 517 H.B. Oil	gal.	.11½	.16½
535	gal.	.22	.27
Burco RA	lb.	.05½	.08¼
C-6 Oil (and 28, 32)	gal.	.33	.38
C-10 Oil	gal.	.25	.30
C-33 Oil	gal.	—	.21½
Caustic Soda—Flake 76% (c.l., drums)	cwt.	—	3.75
Liquid 50% (t.c.)	cwt.	—	2.55
Solid 76% (c.l., dms.)	cwt.	—	3.35

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- NON-DETERIORATING

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MICA

WATERGROUND WHITE AND BIOTITE

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- CHEMICAL DISPERSIONS • ADHESIVES

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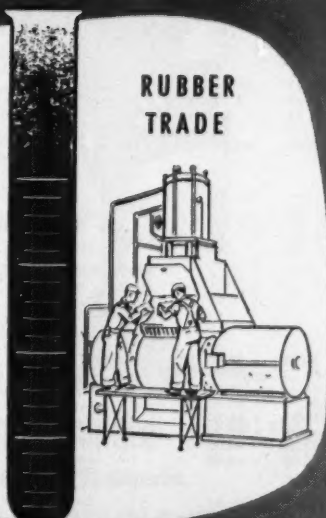

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Distributors of Natural Rubber Latex • Manufacturers of Special Compounds of Synthetic or Natural Rubber Latices to meet your needs

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YES, it's a fact! Original models of The Holmes Hydraulic Press--installed 'way back in 1901--are still producing day after day in big name rubber plants throughout the U. S. A. This amazing, half-century performance record is positive proof that The Holmes Hydraulic Press is an outstanding investment in--Uninterrupted Production...Minimum Maintenance...and...Maximum Output.

WRITE OR WIRE FOR SPECIFIC DETAILS---regardless of your particular requirements. With 51 years know-how specializing in machinery and molds for the rubber industry--Holmes can help you solve your problems, too, as they have for so many others. No obligation, of course.

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Successor to Holmes Bros., Inc.
440 N. Sacramento Blvd., Chicago 12, Ill.

RECLAIMING AGENTS (Cont'd)

Cresylic Acid (99-100%)	gal.	.90 -	1.23
D-4	gal.	— -	.27
E-5	gal.	— -	.25
G. B. Reclaiming Oil	gal.	.12 -	.18
CD-10	gal.	.10 -	.16
CD-50-U	gal.	.18 -	.24
Gensol No. 6 (t.c.)	gal.	— -	.45
Heavy Aromatic Naphtha	gal.	— -	.12½
LX-77 Reclaiming Solvent	gal.	.21 -	.33
LX-572 Reclaiming Oil	gal.	.27 -	.32
LX-777 Reclaiming Oil	gal.	.23 -	.33
Neo-Fat D-242	lb.	.05½ -	.07¼
PRR 1	gal.	.15 -	.35
PT 67 Light pine oil	gal.	.50 -	.60
PT 101 Pine tar oil	lb.	.0410 -	.0534
Q Oil	gal.	— -	.286
Reclaiming Oil 1621	lb.	.03 -	.04
Reclaiming Oil 3186 (t.c.)	gal.	.28 -	.38½
Reclaiming Oil 3186-G	gal.	.25 -	.36½
Reclaiming Reagent No. 1431	lb.	.21 -	.25
R.P.A. No. 3	lb.	— -	.46
RR-10	lb.	— -	.36
Soda Ash (c.l., bags)	cwt.	— -	1.50
Solvent 534	gal.	.20½ -	.26½
Solvent Oil 21	gal.	.24 -	.29
C-43	gal.	.23 -	.28
Union Solvent 4060-O	gal.	— -	.149
X-1 Resinous Oil	lb.	.0210 -	.0275

REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

Atlantic HPC-98	lb.	.0740 -	.1225
Continental F	lb.	.0740 -	.1225
Croflex	lb.	.0740 -	.1225
Dixiedensed (and S)	lb.	.0740 -	.1225
Kosmobile (and S)	lb.	.0740 -	.1225
Micronex HPC	lb.	.0740 -	.1225
Spheron 4	lb.	.0740 -	.1225
Witco Disperso No. 6	lb.	.0740 -	.1225

Channel, Medium Processing (MPC) (bags)

Atlantic MPC-95	lb.	.0740 -	.1225
Continental A	lb.	.0740 -	.1225
Croflex TH	lb.	.0740 -	.1225
Dixiedensed HM (and S-66)	lb.	.0740 -	.1225
Huber Arrow TX	lb.	.0740 -	.1225
Kosmobile HM (and S-66)	lb.	.0740 -	.1225
Micronex Standard	lb.	.0740 -	.1225
Spheron 6	lb.	.0740 -	.1225
Texas M	lb.	.0740 -	.1225
Witco Disperso No. 1	lb.	.0740 -	.1225

Channel, Easy Processing (EPC) (bags)

Atlantic EPC E-42	lb.	.0740 -	.1225
Continental AA	lb.	.0740 -	.1225
Croflex 77	lb.	.0740 -	.1225
Dixiedensed 77	lb.	.0740 -	.1225
Kosmobile 77	lb.	.0740 -	.1225
Micronex W-6	lb.	.0740 -	.1225
Spheron 9	lb.	.0740 -	.1225
Texas E	lb.	.0740 -	.1225
Witco Disperso No. 12	lb.	.0740 -	.1225
Wyex	lb.	.0740 -	.1225

Channel, Conductive (CC) (bags)

Continental R-40	lb.	.1800 -	.2400
Dixie 5 Dustless	lb.	.0950 -	.1550
Dixie Voltex	lb.	.1950 -	.2500
Spheron I	lb.	.1200 -	.1650
Kosmink Dustless	lb.	.0950 -	.1550
Kosmos Voltex	lb.	.1950 -	.2500
Spheron C	lb.	.1400 -	.1850
Spheron N	lb.	.2500 -	.2900
Voltex	lb.	.1950 -	.2500

Conductive Furnace Black (CFB) (bags)

Aromex 115	lb.	.0890 -	.1290
Shawinigan Acetylene Black	lb.	.1600 -	.2200
Vulcan C	lb.	.1100 -	.1530

Furnace, Fast Extruding (FEF) (bags)

Arovel	lb.	.0600 -	.1000
Croflex 50	lb.	.0600 -	.1000
Dixie 50	lb.	.0600 -	.1000
Kosmos 50	lb.	.0600 -	.1000
Philblack A	lb.	.0600 -	.1000
Statex M	lb.	.0600 -	.1000
Sterling SO	lb.	.0600 -	.1000

Furnace, General Purpose (GPF) (bags)

Sterling V	lb.	.0500 -	.0900

Furnace, High Modulus (HMF) (bags)

Collocarb	lb.	.0550 -	.0950
Continex HMF	lb.	.0550 -	.0950
Croflex 40	lb.	.0550 -	.0950
Dixie 40	lb.	.0550 -	.0950
Kosmos 40	lb.	.0550 -	.0950
Modulex	lb.	.0550 -	.0950
Statex 93	lb.	.0550 -	.0950
930	lb.	.0470 -	.0870
Sterling L	lb.	.0550 -	.0950
LL	lb.	.0550 -	.0950

REINFORCING AGENTS—CARBON BLACK (Cont'd)

Furnace, Semi-Reinforcing (SRF) (bags)

Continex SRF	lb.	.0400 -	.0800
Croflex 20	lb.	.0400 -	.0800
Dixie 20	lb.	.0400 -	.0800
Essex	lb.	.0400 -	.0800
Furnex	lb.	.0400 -	.0800
Gastex	lb.	.0450 -	.0850
Kosmos 20	lb.	.0400 -	.0800
Pelletex	lb.	.0400 -	.0800
NS	lb.	.04 -	.08
Sterling NS	lb.	.0400 -	.0800
Sterling R	lb.	.0450 -	.0850
Sterling S	lb.	.0400 -	.0800

Furnace, Fine (FF) (bags)

Statex B	lb.	.0650 -	.1050
Sterling 99	lb.	.0650 -	.1050

Furnace, High Abrasion (HAF) (bags)

Aromex	lb.	.0790 -	.1250
115	lb.	.0890 -	.1290
Continex HAF	lb.	.0790 -	.1250
Croflex 60	lb.	.0790 -	.1175
Dixie 60	lb.	.0790 -	.1175
Kosmos 60	lb.	.0790 -	.1175
Philblack O	lb.	.0790 -	.1190
Statex R	lb.	.0790 -	.1250
Vulcan 3	lb.	.0790 -	.1220
6	lb.	.1100 -	.1530

Furnace, Super Abrasion (SAF) (bags)

Philblack E	lb.	.1350 -	.1750
Statex 125	lb.	.1100 -	.1550
9	lb.	.1350 -	.1780

Furnace, Super Abrasion, Intermediate (ISAF) (bags)

Philblack I	lb.	.1100 -	.1500

Thermal, Fine (FT) bags)

P-33 (c.l.)	lb.	— -	.0550

Thermal, Medium (MT) (bags)

Shellblack	lb.	— -	.0250
Sterling MT (c.l.)	lb.	— -	.0350
Thermax (c.l.)	lb.	— -	.0350
Thermax, Stainless (c.l.)	lb.	— -	.0450

REINFORCING AGENTS—SILICA

Hi-Sil	lb.	.10 -	.11¼
C	lb.	.11 -	.12½
Santocel	lb.	.62 -	.64

REINFORCING AGENTS—MISCELLANEOUS

Angelo Shellac	lb.	.30 -	.40
Darex Copolymer No. 3	lb.	.47 -	.49
X34	lb.	.42 -	.44
43G	lb.	.42 -	.44
Darex Copolymer Latex No. 3-T (and X34T)	lb.	.36½ -	.39
Durez 12687 (and 12707)	lb	— -	.37
Durez 13355	lb.	— -	.29½
Good-Rite Resin 50	lb.	.42 -	.44
Kralac A	lb.	.43 -	.44
Lampblack	lb.	— -	.12
Marbon S and S-1	lb.	.42 -	.49
8000	lb.	.42 -	.49
Marmix	lb.	.42 -	.49
Pliolite Latex 190	lb.	.44 -	.45
Pliolite Resin-Rubber Masterbatches	lb.	.45 -	.70
Pliolite NR	lb.	.99 -	1.00
Pliolite S3, S6, and S6B	lb.	.43 -	.44
Polyco 220	lb.	.22 -	.23
Zeolex 20	ton	120.00 -	140.00

RETARDERS

Dutch Boy Normasal	lb.	— -	.46
ESEN	lb.	.35 -	.37
Harcopol 1183	lb.	.60 -	.66
Retarder ASA	lb.	— -	.57
Retarder PD	lb.	.35 -	.37
Retarder T.C.M.	lb.	— -	.65
Retarder W	lb.	— -	.45
Retardex	lb.	.47 -	.50

RUBBER SUBSTITUTES

Mineral Rubber

38	ton	38.00 -	40.00
Black Diamond	ton	38.00 -	40.00
Everlyte	ton	47.00 -	54.00
Gilsonite, Selects (c.l.)	ton	37.00 -	38.00
Hard Hydrocarbon (dms.)	ton	46.50 -	48.50
Herron Flake	ton	— -	45.00
Mineral Rubber, solid	ton	42.50 -	44.50
Pioneer	ton	35.00 -	46.00

Vulcanized Vegetable Oils (Factice)

Amberex	lb.	.29 -	.36
Brown	lb.	.1220 -	.2200
Dispersed	lb.	.26 -	.42
Neophax	lb.	.1570 -	.2680
White	lb.	.1480 -	.2560

Miscellaneous Rubber Substitutes

G.B. Asphaltenes	lb.	.06 -	.06½
Gilsowax B	lb.	09 -	.11
Resin No. 1098 (drums)	lb.	— -	.62
No. 1198	lb.	.46¾ -	.49¼

SOLVENTS

Acetone (dlvd.)	lb.	.08½ -	.11
American Dipentine	gal.	.44½ -	.68
American Pine Oil	gal.	.75½ -	.95½
Amsco Lactol Spirits (t.c.)	gal.	— -	.18
Naphthol Spirits	gal.	— -	.18
Mineral Spirits	gal.	— -	.16
Rubber Solvent (t.c.)	gal.	— -	.17
Solv A (t.c.)	gal.	— -	.25½
Solv A-80 (t.c.)	gal.	— -	.30½
Solv B (t.c.)	gal.	— -	.29
Solv B-90 (t.c.)	gal.	— -	.32
Solv D (t.c.)	gal.	— -	.30½
Solv E	gal.	— -	.29½
Solv F	gal.	— -	.30½
Solv F-80	gal.	— -	.34½
Special Naphtholite (t.c.)	gal.	— -	.17
Special Textile Spirits	gal.	— -	.18
Super Naphtholite	gal.	— -	.17
Textile Spirits (t.c.)	gal.	— -	.18
Amyl Chlorides, Mixed (l.c.l.) (drums)	lb.	.09¼ -	.10¼
Benzol 90%	gal.	— -	.48
Butyl Acetate (t.c.)	lb.	.13 -	.15½
Butyl Alcohol (t.c.)	lb.	.13 -	.15½
Secondary (dlvd.)	lb.	.11 -	.13½
Tertiary (dlvd.)	lb.	12 -	.14½
Carbon Bisulfide, Tech.	lb.	.0440 -	.0800
Carbon Tetrachloride	lb.	.08 -	.08½
Cosol 1	gal.	.37 -	.43
Cosol 2	gal.	.42 -	.48
Cyclohexane	gal.	.55 -	.72
Cyclohexarone	lb.	.25 -	.27 a
Diacetone, Pure (dlvd.)	lb.	.12 -	.14½
Dichlorethyl Ether (dms.)	lb.	.13 -	.15
Formal (dms.)	lb.	.29¾ -	.31¼
Dichloropentane (l.c.l.)	lb.	.05 -	.05¾
Dicom	gal.	.30 -	.42
Halowax Oil	lb.	.28 -	.41
Heptanes (t.c.)	gal.	.17 -	.22
Hexalin Cyclohexanol	lb.	.20 -	.22 a
Hexanes (t.c.)	gal.	.17 -	.22
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.46 -	.63
Ether, Ref. (dlvd.)	gal.	.30 -	.47
Mersol	gal.	.43 -	.79
Mesityl Oxide (dlvd.)	lb.	.11½ -	.14
Methyl Acetone, Syn. (dms., dlvd.)	gal.	.54½ -	.72¼
Methyl Ethyl Ketone	lb.	.11 -	.13½
Methyl Isobutyl Ketone (dlvd.)	lb.	.13 -	.15½
N-5 Pentane Mix. (t.c.)	gal.	— -	.13¾
N-6 Hexanes (t.c.)	gal.	— -	.14½
N-7 Hexanes (t.c.)	gal.	— -	.13½
Penetrell	gal.	.44½ -	.68
Petrolene (t.c.)	gal.	— -	.13125
Picolines, Alpha, Refined	lb.	.44 -	1.00
Mixed	lb.	— -	.34
Proprietary Solvent (dms.)	gal.	.51 -	.72
PT 150 Pine Solvent (dms.)	gal.	— -	.44
Pyridine, Refined	lb.	— -	1.15
Quinoline	lb.	.60 -	1.45
Rubber Solvent (t.c.)	gal.	— -	.16
Rubsol (t.c.)	gal.	— -	.11875
Skellysolve B (Hexanes) (t.c.)	gal.	— -	.148
C (Heptanes) (t.c.)	gal.	— -	.141
E (Octanes) (t.c.)	gal.	— -	.155
R (Solvent Naphtha)	gal.	— -	.114
Solvent, Crude, Light	gal.	.19 -	.28
Solvesso 100 (t.c.)	gal.	— -	.28
150 (t.c.)	gal.	— -	.28
Sunny South Dipentine	gal.	.44½ -	.68
Sunny South Pine Oil	gal.	.75½ -	.95½
Sunray	gal.	.1140 -	.1600
Toluene (drums)	gal.	— -	.23
Toluol (t.c.)	gal.	— -	.45
Trichlorethane	lb.	.11½ -	.13½
Triglycol Dichloride (dms.)	lb.	.63 -	.64
Union Thinner 1	gal.	— -	1.78
3	gal.	— -	1.78
5	gal.	— -	1.68
7	gal.	— -	1.68
2-50-W Hi-Flash	gal.	— -	.41
X-7 Sp. Heptanes (t.c.)	gal.	— -	.11
Xylol	gal.	— -	.45

STABILIZING AGENTS (for Vinyl Resins)

Advastab No. 21	lb.	— -	1.08
Basic Silicate White Lead	lb.	.15¼ -	.16¼
Bunatak Polymer No. 780	lb.	— -	.04
No. 5514	lb.	— -	.35
BVS	lb.	— -	.73¾
Cadmium Stearate	lb.	1.42 -	1.44
Dutch Boy DS-207	lb.	— -	.54
Plumb-O-Sil A	lb.	— -	.29¾
B	lb.	— -	.31¼
Tribase	lb.	— -	.27¼
Dythal	lb.	— -	.41
Ferro 120 (dms.)	lb.	.73¼ -	.75¼
121 (dms.)	lb.	.68 -	.70
200 (dms.)	lb.	1.33 -	1.35
211 (dms.)	lb.	.65 -	.67
221 (dms.)	lb.	1.51 -	1.53
541 (dms.)	lb.	.35½ -	.37½
541A (dms.)	lb.	.81¾ -	.83¾
620 (dms.)	lb.	.75½ -	.77½
700 (dms.)	lb.	.48¾ -	.50¾
900 (dms.)	lb.	1.02¾ -	1.04¾
903 (dms.)	lb.	.65 -	.67
909 (dms.)	lb.	1.02¾ -	1.04¾
920	lb.	— -	.98
931 (dms.)	lb.	.75¾ -	.92
1820 (dms.)	lb.	.90 -	.92

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ALL STEEL, ALL WELDED CONSTRUCTION, with forged steel hubs for 1¼", 1½" and 2" square bars.

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STABILIZING AGENTS (Cont'd)

Harshaw 1-V-3	lb.	.43	.58
1-V-4	lb.	.74	.89
2-V-4	lb.	1.19	1.29
2-V-7	lb.	1.24	1.34
2-V-8	lb.	1.34	1.49
5-V-1	lb.	.41	.56
5-V-2	lb.	.44	.59
7-V-1	lb.	.95	1.05
7-V-2	lb.	1.00	1.15
8-V-1	lb.	1.23	1.33
8-V-3	lb.	.60	.70
8-V-5	lb.	.93	1.03
9-V-1	lb.	.89	.99
9-V-2	lb.	.45	.60
12-V-5	lb.	.90	1.05
128-V-5	lb.	.86	1.01
Lead Stearate No. 102	lb.	.33	.34
Lead Stearate, Precip.	lb.	.39	.41
Fused	lb.	—	**.35½**
Lithium Stearate	lb.	.72	.88¼
Stabelan E	lb.	1.39	1.50
XL	lb.	.60	.70
G	lb.	.85	.95
HR	lb.	1.25	1.40
Stabilizer No. 3	lb.	—	2.15
Stabilizer No. 42	lb.	—	.85
Stabilizer No. 52	lb.	—	2.15
Stabilizer No. 89X	lb.	—	.75
Stabilizer No. 143	lb.	—	.85
Stabilizer BC-12	lb.	—	.90
Stabilizer B-5	lb.	—	.70
Stabilizer CH-14	lb.	—	.65
Stabilizer CH-20	lb.	—	.65
Stabilizer E6B	lb.	—	.95
Stabilizer E-49	lb.	—	.60
Stabilizer E-98	lb.	—	.55
Stabilizer G-1	lb.	1.25	1.40
Stabilizer HR	lb.	.85	.89
Stabilizer JCX	lb.	—	.63
Stabilizer L	lb.	—	.60
Stabilizer OM-10	lb.	—	2.15
Stabilizer OM-18	lb.	—	3.65
Stabilizer SN	lb.	—	.48
Stabilizer V-1-N	lb.	—	.43
Stabilizer VL-3	lb.	—	1.00
Stabilizer V-7939	lb.	—	**.60**
Staycin 1	lb.	—	.65
Vanstay L	lb.	.33	.35
H	lb.	.75	.77
H.T.	lb.	.90	.92
S	lb.	.65	.70

STIFFENING AGENTS

Calco S.A.	lb.	.85	.88

SUN CHECKING AGENTS

Antisol	lb.	—	.23
Antisun	lb.	—	.18½
Heliozone	lb.	.26	.27
NBC	lb.	—	1.55
Sharples Wax	lb.	.23	.24
Sunolite	lb.	.21	.23
Sunproof 713	lb.	.25	.26
Imp.	lb.	.25	.26
Jr.	lb.	.20	.21
Tonox	lb.	.52	.54

SURACE ACTIVE AGENTS

Aquarex D	lb.	—	.80
MDL	lb.	—	.33
ME	lb.	—	.97
NS	lb.	—	.60
SMO	lb.	—	.50
WAQ	lb.	—	.28

TACKIFIERS

Arcco 620-32B	lb.	.20	.21
716-30	lb.	.18	.19
1941-21	lb.	.16	.17
Galex (drums)	lb.	.15½	.19¼
Indopol H-300	gal.	1.00	1.21
Koresin	lb.	.73	.75
Liquid Rubber Flux	lb.	—	.14
Nilox (c.l.)	cwt.	—	14.50
Resin V	lb.	—	**.23¼**
Rubtack	lb.	—	**.12**
Synthoi	lb.	—	.24¼
Tackifier 1041-21	lb.	.16½	.17½
Vistac No. 1	gal.	1.00	1.21
A	lb.	.21½	.22¼
Zirex (c.l.)	cwt.	—	14.75

THICKENERS (FOR LATEX)

Alcogum AN-6	lb.	—	**.85**
AN-10	lb.	—	**.98¼**
Betanol (drums)	lb.	—	**.70**
Emcol PL50-3 (dms.)	lb.	—	.57
Emulsorex No. 5	lb.	—	**.35**
Good-Rite K-702	lb.	.34½	.35
K-704	lb.	.21	.22
K-705	lb.	.30	.31
K-707	lb.	.18	.19
K-708	lb.	.29	.30
K-710	lb.	.15¾	.16¼
Lecithin	lb.	.12	.17
Modicol VD	lb.	—	**.12¼**
VE	lb.	—	**.10¼**
VF	lb.	—	**.10¼**
VK	lb.	—	**.07**
Polyco 296	lb.	.15	.16
296-N	lb.	.15	.16
Propylene Laurate (dms.)	lb.	.57	.67
Sodium Silicate	cwt.	1.50	2.65

VULCANIZING AGENTS

Selenium

Vandex	lb.	—	3.50

Sulfur

Blackbird	cwt.	—	2.30
Crystex	lb.	.19½	.23
Darex Dispersed Sulfur	lb.	.12½	.17½
Devil (c.l.)	cwt.	—	1.75
Dispersed Sulfur	lb.	.14	.16
Insoluble Sulfur 60	lb.	.12½	.13
Spider	cwt.	—	2.30
Star (c.l.)	cwt.	—	2.25
Tire (c.l.)	cwt.	—	1.75
Tube	cwt.	—	2.25
Vultac 2	lb.	.47	.49
3	lb.	.51	.53

Tellurium

Telloy	lb.	—	2.50

WETTING AGENTS

Advawet No. 10	lb.	—	.20
No. 15	lb.	—	.21½
No. 33	lb.	—	.48
Aerosol 18	lb.	—	.40
AY	lb.	1.00	1.25
MA	lb.	1.00	1.25
OT 70% Clear	lb.	.80	1.00
OT 100%	lb.	1.00	1.50
Alrosol (dms.)	lb.	—	**.40**
Alrosperse	lb.	—	**.18**
Areskap 50	lb.	.30	.38
Dry 100	lb.	.60	.72
Aresket 240	lb.	.30	.38
Dry 300	lb.	.60	.72
Aresklene 375	lb.	.42	.57
Armacs	lb.	.29	.76
Arquads	lb.	**.31**	**.61**
Emcol 5100 (dms.)	lb.	—	.40
5130 (dms.)	lb.	—	.40
Etho-chemicals	lb.	.34	.80
Kessco E-122 (dms.)	lb.	—	.49
Kreelon 4G (bags)	lb.	.132	.155
8G (dms.)	lb.	.28	.30
Lecithin	lb.	.13	.17
Modicol L	lb.	—	**.58**
N	lb.	—	**.40**
S	lb.	—	.32
Nekal NS	lb.	—	.28
Nopco 1086-A	lb.	**.42**	**.50**
1187-X	lb.	—	**.14½**
Parnol	lb.	**.13**	**.18**
Selapon Gel	lb.	—	.13
Santomerse D	lb.	.44	.65
S	lb.	.13	.25
Sorapon SB	lb.	.14	.15
SF Conc.	lb.	.29	.30
Sorbit P	lb.	—	**.25**
Stablex G	lb.	**.50**	**.70**
Tergitol 4 (dms., dlvd.)	lb.	.30	.31
7 (dms., dlvd.)	lb.	.36	.37
O8 (dms., dlvd.)	lb.	.30	.31
P28 (dms., dlvd.)	lb.	.18½	.19
Trenamine W-30	lb.	—	**.15**
Vultamol	lb.	—	.17½
Wetsit Conc.	lb.	**.25**	**.32**

MISCELLANEOUS CHEMICALS

Aquarex G	lb.	—	.21
Copper Inhibitor X-872-L	lb.	—	2.01
D-Tac	lb.	—	.22
2-Ethylhexanol	lb.	.27¼	.29¼
Fura-Tone Resin 1226	lb.	.41	.43
MODX	lb.	.29½	.34
Para Resin 2457	lb.	.04	.04½
2702	lb.	.04	.04½
2718	lb.	.04	.04½
Pigmented Filmite (dlvd.)	lb.	—	.16¾
Resorcin, Tech.	lb.	.82½	.83½
Rio Resin	lb.	.60	.62
Sherosope F	lb.	.17	.17¼
F-445	lb.	.17	.17¼
L	lb.	.18	.18¼
N	lb.	.18	.18¼
T	lb.	.18	.18¼
Sublac Resin PX-5	lb.	.23½	.24½
Sulfasan R	lb.	—	1.50
Synpep	lb.	.54	.60
Thiokol LP-2	lb.	.96	1.06
LP-3	lb.	.96	1.06
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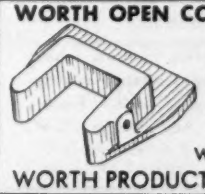
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WANTED: Rubber mills, calenders, mixers, Banbury mixers, extruders, grinders, cutters, hydraulic presses, injection molding machines. CONSOLIDATED PRODUCTS CO., INC., 14-17 Park Row, New York 38, N. Y.

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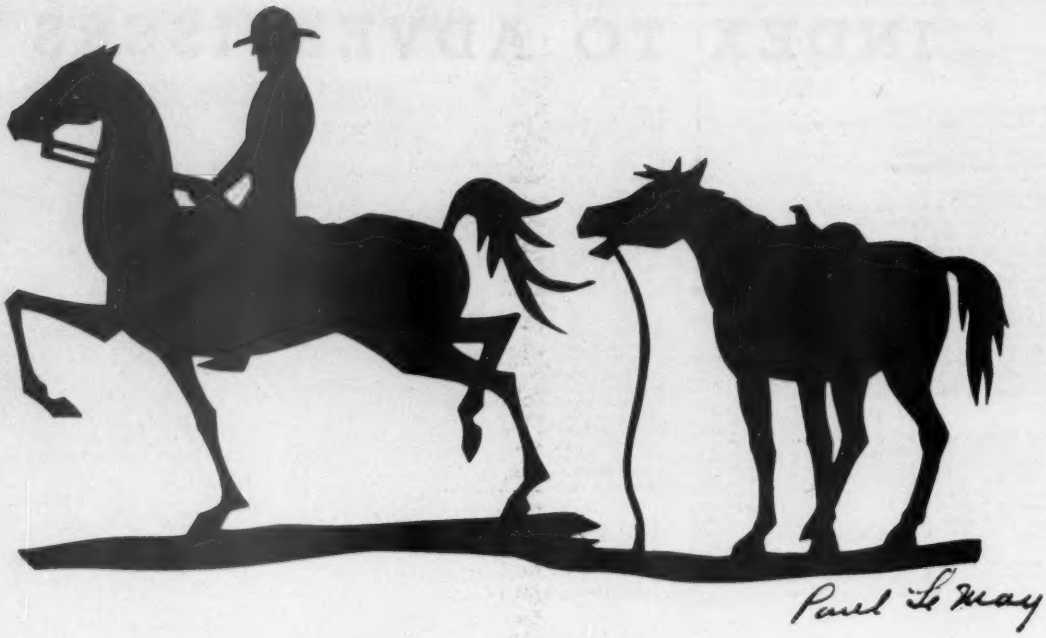

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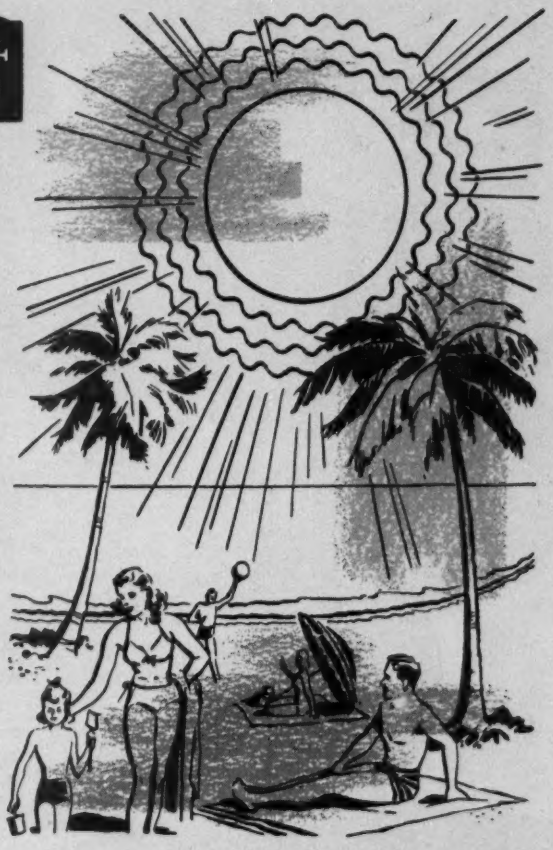

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